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Endress+Hauser
People for Process Automation

Liquiline M CM42 PROFIBUS® Guideline

Datenübertragung über PROFIBUS PA

gültig ab:
Softwareversion 02.04.xx

Dokument: Liquiline M CM42 - Datenübertragung über PROFIBUS PA

Erste Ausgabe: 1.14
Aktuelle Ausgabe: 2.17

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Inhaltsverzeichnis

1 Allgemeines

1.1 Verwendung der Zusatzdokumentation

Die vorliegende Guideline ergänzt die Betriebsanleitung des Liquiline M CM42 und richtet sich an Personen, deren Aufgabe es ist, das Gerät in ein PROFIBUS-Netzwerk zu integrieren. Es wird vorausgesetzt, dass der Leser über hinreichende Kenntnisse der PROFIBUS-Technologie verfügt.

Die Guideline gilt für die Liquiline M CM42 Gerätegeneration ab Firmware-Version 02.04.xx.
Zur Bestimmung der Gerätegeneration lesen Sie bitte das Kapitel 1.4.

Einleitende Hinweise zur Inbetriebnahme und Bedienung des Gerätes entnehmen Sie bitte der Benutzerdokumentation.

Weiterführende Informationen zur PROFIBUS-Systemintegration und technische Anleitungen zum Gerät erhalten Sie auf unserer Homepage:

- Liquiline M CM42
  www.endress.com/cm42

Darüber hinaus stellt die PROFIBUS Nutzerorganisation e.V. verschiedene Leitfäden zur Installation und Kommissionierung eines PROFIBUS-Netzwerks auf www.profibus.com zur Verfügung, z.B.

- PROFIBUS PA – User and Installation Guideline
  www.profibus.com/download/installation-guide

1.2 Hinweis-Symbole

	Allgemeine Hinweise und Informationen
	Hinweise zur Geräte-Handbedienung

1.3 Abkürzungen

Begriff	Beschreibung
AIx	Analog Input (PA-Profil Funktionsblock)
ATBx	Analyser Transducer Block 1..n Jeder Prozesswert wird in der Umsetzung des PA-Profil-Blockmodells im Liquiline M CM42 durch einen Analyser Transducer Block (ATB) repräsentiert
ENP	Elektronisches Typenschild (electronic name plate)

Begriff	Beschreibung
GSD	Geräte-Stamm-Daten, neu: General station description
I&M	Identification & Maintenance Funktionen zum Lesen der Datenstrukturen für Geräteidentifikation und Wartung
Identnummer / PNO-Identnummer	16 Bit Geräte-Identifikationsnummer zur Kennzeichnung der Geräteeigenschaft im PROFIBUS-Netzwerk, vergeben durch die PROFIBUS Nutzerorganisation e.V.
Liquiline Cond	Geräte-Kennz. f. Liquiline M CM42 Ver.2.xx, Projektierung Leitfähigkeit
Liquiline Oxygen	Geräte-Kennz. f. Liquiline M CM42 Ver.2.xx, Projektierung Sauerstoff
Liquiline pHORP	Geräte-Kennz. f. Liquiline M CM42 Ver.2.xx, Projektierung pH/ORP
MBP	Manchester Coding Bus Powered Übertragungstechnik für PROFIBUS-PA Geräte nach IEC 61158-2
n.A.	Nicht anwendbar
n.v.	nicht verfügbar
NAMUR	Normungsarbeitsgemeinschaft für Mess- und Regelungstechnik in der Chemischen Industrie (Standardization working group for Measurement and Control in the chemistry in Germany)
NAMUR NE107	Self-Monitoring and Diagnosis of Field Devices
Non_FR_Parameters	Parameter, die von einer Rücksetzung in den Auslieferungszustand ausgenommen sind (s. Kap. 6.4.1)
Octet	Bezeichnung eines Bytes in einem PROFIBUS-Telegramm
PI	PROFIBUS International (www.profibus.com)
PNO	PROFIBUS Nutzerorganisation e.V., Haid-und-Neu-Str. 7, 76131 Karlsruhe, Germany
SAP	Service Access Point Zwischen Master und Slave ausgehandelte Zugangsadresse für die Ausführung von Services über die PROFIBUS-Datenübertragungsschicht
Werksdefault (Gerätemenü)	Zurücksetzen des Gerätes in den Auslieferungszustand (Werkseinstellung). Hinweis: einige Parameter sind von der Rücksetzung ausgenommen (s. Kap. 6.4.1)

1.4 Geräteidentifikation

Um die Liquiline M CM42 Gerätegeneration zu identifizieren, stehen Ihnen im laufenden Betrieb die folgenden Möglichkeiten zur Verfügung:

- Abfrage der PROFIBUS-Leiterkartenbezeichnung über das Gerätemenü
- Abfrage des Physical Block Parameters DEVICE_ID über PROFIBUS

1.4.1 Bestimmung der Feldbus-Gerätegeneration über Gerätemenü

Pfad	Diag/Geräteinformationen/Feldbusmodul/Bezeichnung		
Format	Textfeld		
Anzeige	FBPA3	Gerät ist ein Liquiline M CM42 Ver. 2.xx	
	FBPA1	Gerät ist ein Liquiline M CM42 Ver. 1.xx[1]	

1.4.2 Bestimmung der Feldbus-Gerätegeneration über PROFIBUS

Physical Block Parameter DEVICE_ID (Länge = 16 Zeichen)			
	Projektierung		
	pHORP	**Cond**	**Oxygen**
Liquiline M CM42 Ver. 2.xx	"Liquiline pHORP "	"Liquiline Cond "	"Liquiline Oxygen"
Liquiline M CM42 Ver. 1.xx[1]	"Liquiline M CM42"		

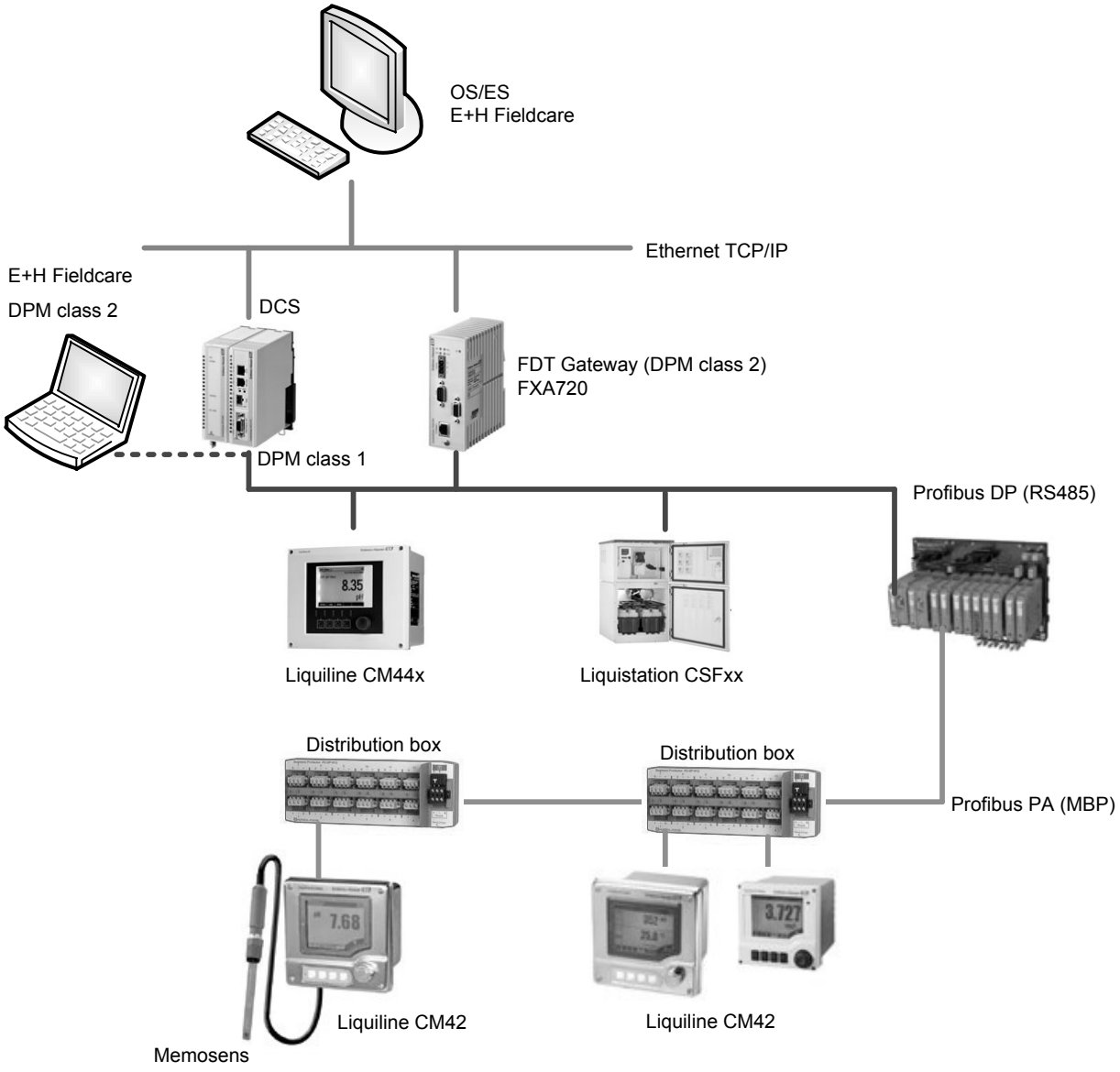
1.5 Normative Dokumente und Spezifikationen

Norm/Spezifikation	**Beschreibung**
IEC 61158-2	Physical Layer specification (Type 1)
IEC 61158-3	Data link service definition (Type 3)
IEC 61158-4	Data Link Layer protocol specification (Type 3)
IEC 61158-5	Application Layer service definition (Type 3)
IEC 61158-6	Application Layer protocol specification (Type 3)
IEC 61784-1	Digital data communication for measurement and control (CPF 3/2)
PA Profile	PROFIBUS Profile for Process Control Devices, published by PROFIBUS Nutzerorganisation e.V., Haid-und-Neu-Str. 7, 76131 Karlsruhe, Germany
I&M	PROFIBUS Profile Guidelines – Part 1 – Identification & Maintenance Functions, published by PROFIBUS Nutzerorganisation e.V., Haid-und-Neu-Str. 7, 76131 Karlsruhe, Germany

[1] Die Beschreibung des PROFIBUS-Geräteverhaltens des Liquiline M CM42 vers. 1.xx ist nicht Gegenstand dieser Dokumentation.

1.6 Netzwerk-Topologie

Das folgende Schaubild stellt das Liquiline M CM42 in der Prozesslandschaft dar. Das Gerät kann an Master-Systemen der Klassen 1 und 2 betrieben werden.



Netzwerk-Topologie Liquiline M CM42

2 Leistungsmerkmale

Das PROFIBUS-Kommunikationsinterface des Liquiline M CM42 wurde nach dem IEC 61158-Standard (Data Communication For Measurement and Control) entwickelt und getestet. Die unterstützten Protokolle, Anwendungsprofile und Diagnosemöglichkeiten, sowie die Eigenschaften der zu Grunde liegenden Übertragungstechnologie können Sie den nachfolgenden Tabellen entnehmen.

2.1 Übertragungstechnologie

Norm	IEC 61158-2
Physikalische Signalkodierung	Manchester Coding Bus Powered (MBP)
Max. Länge ab Segmentkoppler	1900 m: Standard- und eigensichere Anwendungen der Kategorie ib 1000 m: Eigensicheren Anwendungen der Kategorie ia
Teilnehmer	max. 10 im Ex-Bereich (Ex-ia) max. 24 im Ex-Bereich (Ex-ib) max. 32 im Nicht-Ex-Bereich
Übertragungsrate	31,25 kBit/s
Buszugriffsmethode	Master-Slave
Busterminierung	Extern
Anbindung an PROFIBUS DP-Netzwerk	Über Segmentkoppler (nicht EX-Betrieb!)

2.2 Protokolle

DP-V0/MS0	Zyklische Kommunikation, Master Klasse 1 ↔ Slave
DP-V1/MS1	Azyklischer Kommunikationskanal Master Klasse 1 ↔ Slave Dienste: ▪ MSAC_C1_Read & Write
DP-V1/MS2	Azyklischer Kommunikationskanal Master Klasse 1 ↔ Slave, bis zu zwei Master-Verbindungen im Parallelbetrieb möglich. Dienste: ▪ MSAC_C2_Initiate & Abort ▪ MSAC_C2_Read & Write
GSD-Dateien	▪ EH3x1565.GSD – herstellerspezifisch, pH/ORP-Sensoren ▪ EH3x1566.GSD – herstellerspezifisch, Leitfähigkeits-Sensoren ▪ EH3x1567.GSD – herstellerspezifisch,

	Sauerstoff-Sensoren ▪ EH3x1543.GSD – herstellerspezifisch, Liquiline M CM42 Ver. 1.xx Kompatibilitätsbetrieb (s. Kap. 4.4), pH/ORP-Sensoren ▪ EH3x1544.GSD – herstellerspezifisch, Liquiline M CM42 Ver. 1.xx Kompatibilitätsbetrieb (s. Kap. 4.4), Leitfähigkeits-Sensoren ▪ EH3x154B.GSD – herstellerspezifisch, Liquiline M CM42 Ver. 1.xx Kompatibilitätsbetrieb (s. Kap. 4.4), Sauerstoff-Sensoren ▪ PA139750.GSD (Profil Identifier, Analyzer PA-Geräte)
Freeze-Support	vorhanden
Alarme	n.v.
Sync-Support	n.v.

2.3 Anwendungsprofil

Standard	PA Profile Version 3.02
Hersteller-ID	11_h
Identifier	▪ 1565_h – PNO-herstellerspezifisch, pH/ORP-Sensoren ▪ 1566_h – PNO-herstellerspezifisch, Leitfähigkeits-Sensoren ▪ 1567_h – PNO-herstellerspezifisch, Sauerstoff-Sensoren ▪ 1543_h – PNO-herstellerspezifisch, Liquiline M CM42 Ver. 1.xx Kompatibilitätsbetrieb (s. Kap. 4.4), pH/ORP-Sensoren ▪ 1544_h – PNO-herstellerspezifisch, Liquiline M CM42 Ver. 1.xx Kompatibilitätsbetrieb (s. Kap. 4.4), Leitfähigkeits-Sensoren ▪ $154B_h$ – PNO-herstellerspezifisch, Liquiline M CM42 Ver. 1.xx Kompatibilitätsbetrieb (s. Kap. 4.4), Sauerstoff-Sensoren ▪ 9750_h (Profil Identifier, Analyzer PA-Geräte)
Statusausgabe	Classic & Condensed
Ausgangsgrößen	6 AI-Blöcke
Eingangsgrößen	n.v.

2.4 Identification & Maintenance (I&M)

Unterstützte Strukturen	Inhalte
I&M0 (65000):	Gerätespezifische Basisinformationen
I&M1 (65001)	Tags Function und Location
I&M2 (65002)	Installationsdatum
I&M3 (65003)	PB.DESCRIPTOR
I&M-PA (65016)	Profil- und Versionsinformationen

Hinweis

Auf alle I&M Strukturen kann nur lesend über den I&M Call Service zugegriffen werden.

2.5 Diagnose

Art	Beschreibung
Physical Block Parameter (Standard)	▪ DIAGNOSIS ▪ DIAGNOSIS_EXTENSION
Erweiterte, herstellerspezifische Diagnose	▪ Unterstützt (Physical Block Parameter DEVICE_DIAGNOSIS)
Diagnose-Konfiguration	Verfügbar über Physical Block Parameter DIAG_EVENT_SWITCH (s. Kap. 5.4)

3 Montage und Verdrahtung

Die Montage und Verdrahtung ist in der

Betriebsanleitung Liquiline M CM42, Teil 1, BA00381C

ausführlich beschrieben.

Bitte beachten Sie darüber hinaus auch die Installationsrichtlinien, die von der PROFIBUS Nutzerorganisation zur Verfügung gestellt werden. Sie können die elektronische Ausgabe kostenlos von der Webseite der PNO beziehen.

www.profibus.com/downloads/installation-guide

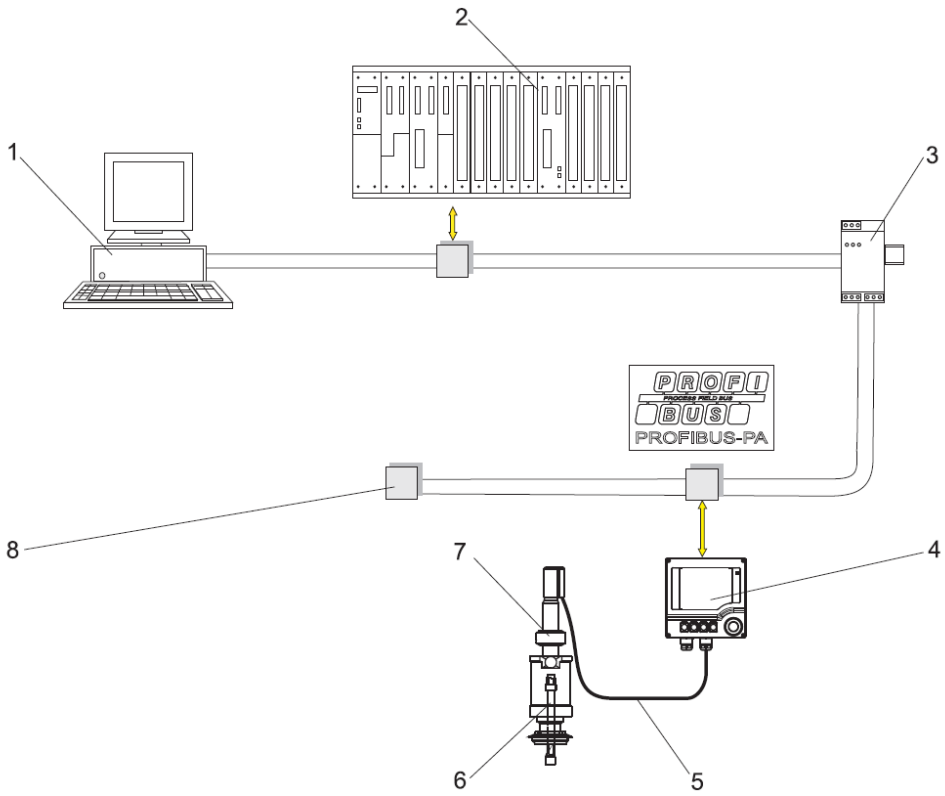
Eine Kurzanleitung zur Inbetriebnahme der Liquiline M CM42 Feldbusanschlussbuchse finden Sie auf den folgenden Seiten.

4 Inbetriebnahme

4.1 Systemübersicht

Das folgende Schaubild zeigt typische Komponenten einer mit PROFIBUS vernetzten Anlage.
Das System könnte bestehen aus

- Liquiline M CM42
- einer Taucharmatur, z.B. CPA140 oder Durchflussarmatur, z.B. CPA240 oder Wechselarmatur, z.B. CPA875; jeweils mit oder ohne Potenzialausgleichsstift (PAL)
- einem pH/Redoxsensor mit Memosens-Technologie: z.B. CPS11D
- einem Messkabel CYK10
- eines PROFIBUS-DP Masters der Klasse 1 oder 2, z.B. SPS inkl. PC und Bediensoftware
- DP/PA-Segmentkoppler
- Terminierungswiderstand

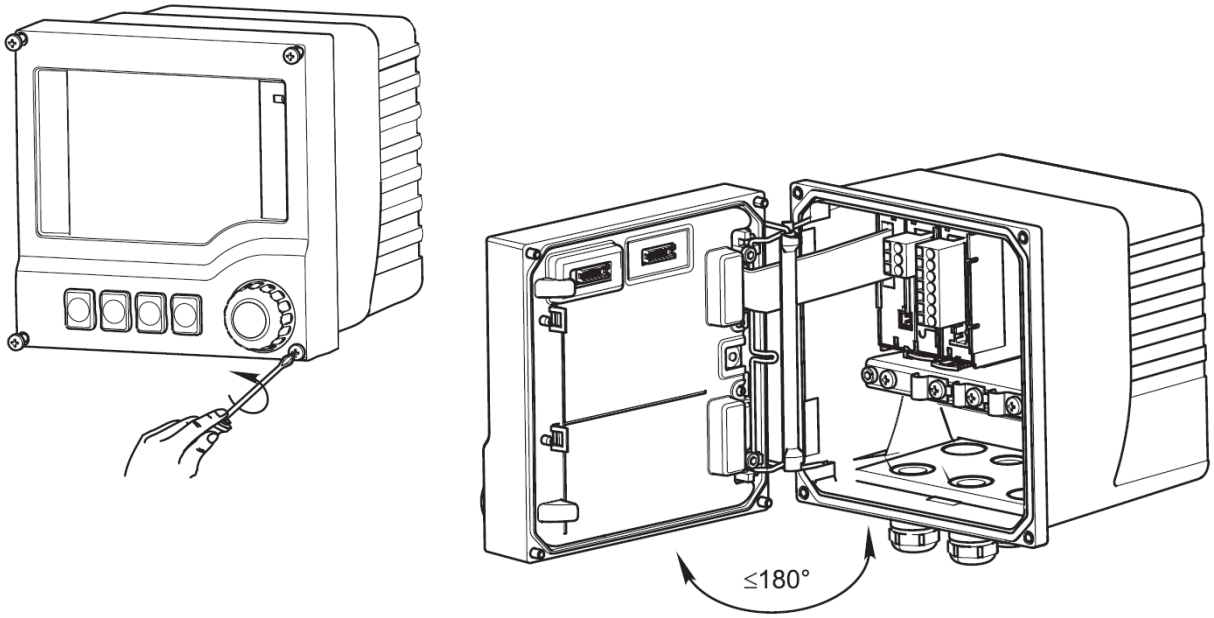


1 PC mit Bediensoftware
2 PROFIBUS Master (SPS)
3 Segmentkoppler
4 Liquiline M CM42
5 Messkabel
6 Wechselarmatur
7 pH-/Redoxsensor
8 Terminierungswiderstand

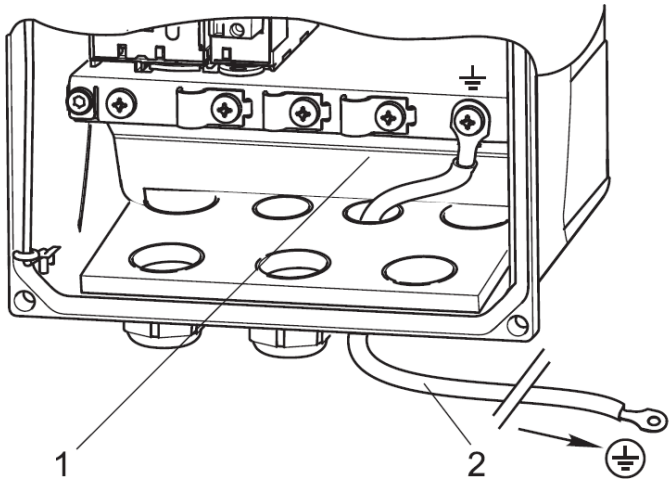
4.2 Kontaktieren der Feldbusschnittstelle

4.2.1 Öffnen des Gehäuses

Lösen Sie die vier Schrauben an der Frontseite mit einem Kreuzschlitz-Schraubendreher:



4.2.2 Gehäuseerdung

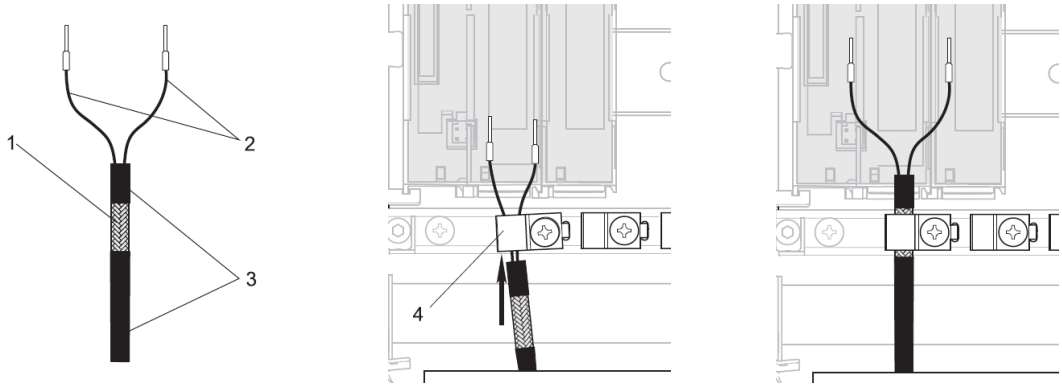


1 Kabelmontageschiene 2 2,5 mm² (14 AWG) Funktionserde

- Verwenden Sie möglichst nur konfektionierte Originalkabel
- Erden Sie das Sensorkabel im Gehäuse des Messumformers, wie in den nachfolgenden Abbildungen gezeigt (Kabelbeispiel, entspricht nicht zwangsläufig dem Originalkabel)

4.2.3 Anschluss Feldbus-Signalkabel und Spannungsversorgung

Erdungsschraube festziehen, Kabelschirm ist durch Erdschelle geerdet:



1 Außenschirm (frei gelegt)
2 Kabeladern mit Endhülsen
3 Kabelmantel (Isolierung)
4 Erdungsschelle

Für den Anschluss können Sie eindrähtige Leiter oder mehrdrähtige Leiter mit Aderendhülsen verwenden. Es ist nur ein Leiter pro Klemme erlaubt.

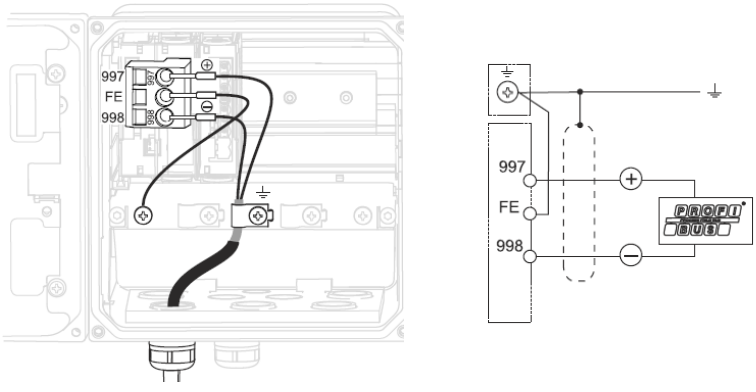
Hinweis
Zur Vermeidung von Schäden oder Fehlfunktionen infolge falscher Versorgungsspannung halten Sie bitte die Vorgaben zur zulässigen und Mindest-Versorgungsspannung ein.

Sie haben verschiedene Möglichkeiten des Anschlusses:

1. Beidseitig geschirmte Zweidrahtleitung, "Harte Erdung" (generell der "Kapazitiven Erdanbindung" vorzuziehen)
2. Geschirmte Zweidrahtleitung, "Kapazitive Erdanbindung" (Schirm geräteseitig über Kondensator geerdet, Zubehör "C-Module" nötig), bei Gefahr von großen Potenzialausgleichsströmen
3. Verwendung der Feldbusanschlussbuchse (Zubehör)

Anschluss mit "harter Erdung":

Legen Sie den Kabelschirm auf die Kabelmontageschiene auf und schließen Sie die Kabeladern entsprechend der Belegungen, wie in der folgenden Abbildung dargestellt, am CPU Modul an.



4.3 Systemintegration

Zur Kopplung des Liquiline M CM42 mit einem Leitsystem sind die folgenden Bedingungen zu erfüllen:

- Korrekte Einstellung der Physical-Layer-Kommunikationsparameter bei Betrieb über Segmentkoppler (DP-Netzwerk)
- Auswahl einer passenden GSD-Datei und der damit verknüpften Geräte-Identnummer
- Korrekte Adressierung über Anpassung der Bus-Adresse

Hinweis

Zwischen der GSD-Datei und der Geräte-Identnummer besteht grundsätzlich eine 1:1-Beziehung, d.h. die Wahl einer GSD-Datei legt die Geräte-Identnummer fest, mit der die Kommunikation erfolgen soll.

4.3.1 GSD-Dateien

Die spezifischen Eigenschaften der PROFIBUS-Geräte sind in GSD-Dateien hinterlegt. Für jede der drei Sensorgattungen pH/ORP (pHORP), Leitfähigkeit (Cond) und Sauerstoff (Oxygen) wird eine eigene GSD-Datei angeboten, die Sie über www.endress.com/cm42 beziehen können.

Alternativ kann das Gerät mit der generischen Analyzer PA-Profil GSD der PROFIBUS Nutzerorganisation e.V. betrieben werden. Diese erhalten Sie auf www.profibus.com. In den folgenden Tabellen sind alle für die oben beschriebenen Anwendungsfälle nutzbaren GSD-Dateien gelistet.

4.3.1.1 Liquiline M CM42

Datei	Typ	Anmerkungen
EH3X1565.GSD	herstellerspezifisch	Physical Block DEVICE_ID → "Liquiline pHORP"
EH3X1566.GSD	herstellerspezifisch	Physical Block DEVICE_ID → "Liquiline Cond"
EH3X1567.GSD	herstellerspezifisch	Physical Block DEVICE_ID → "Liquiline Oxygen"
PA139750.GSD	generisch	Analyser Profile for MBP Devices[2]

4.3.1.2 Liquiline M CM42 Ver. 1.xx (Kompatibilitätsmodus)

Nutzer der älteren Liquiline M CM42 Ver. 1.xx Gerätegeneration können die dafür entwickelten GSD-Dateien weiterhin verwenden. Hierfür muss das Gerät in einem Kompatibilitätsmodus betrieben werden. Lesen Sie hierzu bitte Kapitel 4.4.

[2] Liquiline M CM42 Ver. 2.xx unterstützt diese Module: EMPTY_MODULE, Analog Input (AI)

Hinweis

Um den vollen Leistungsumfang zu nutzen wird grundsätzlich wird der Einsatz einer herstellerspezifischen GSD-Datei für die aktuelle Gerätegeneration empfohlen.

4.3.2 Geräte-Identnummern

Die Geräte-Identnummer ist eine durch die PROFIBUS Nutzerorganisation e.V. (PNO) zugewiesene 16-Bit-Nummer, die das Gerät fest an eine GSD-Datei bindet und damit das Geräteverhalten für den PROFIBUS–Master offen legt. Das Liquiline M CM42 kann mit verschiedenen Identnummern betrieben werden, jeweils abhängig vom angeschlossenen Sensortyp. Über das Anpassen des Physical Block Parameters IDENT_NUMBER_SELECTOR im PA-Profil können folgende Einstellungen bezüglich der Identnummer getroffen werden:

- Feste Einstellung auf die aktuelle PNO-Geräte-Identnummer
- Feste Einstellung auf die PNO-Identnummer des Liquiline M CM42 Ver. 1.xx
- Feste Einstellung auf die generische Analyzer Profile-Identnummer (0x9750) der PNO
- Automatische Auswahl einer der drei genannten Einstellungen durch Parametrierung des PROFIBUS-Masters

Im zuletzt genannten Anpassungsmodus (Physical Block Parameter IDENT_NUMBER_SELECTOR = 127) übernimmt das Liquiline M CM42 die vom Master gesendete Identnummer aus dem Parametertelegramm.

Ebenso ist eine Einstellung über das Setup-Gerätemenü, wie im Folgenden dargestellt, möglich:

Pfad	Setup/Allg. Einstellungen/Ident number selector		
Format	Enumeration		
Auswahlliste	0x9750	IDENT_NUMBER_SELECTOR = 0 Analyser-Profil GSD Datei (generisch)
	Anpassungsmodus	IDENT_NUMBER_SELECTOR = 127 Automatische Auswahl
	Liquiline pHORP 0x1565	IDENT_NUMBER_SELECTOR = 128 Aktuelle Geräte-GSD-Datei
	Liquiline M CM42 pH/ORP 0x1543	IDENT_NUMBER_SELECTOR = 129 Kompatibilitätsmodus Liquiline M CM42 Ver. 1.xx (s. Kap. 4.4)

Hinweis

Im Auslieferungszustand ist der Physical Block Parameter IDENT_NUMBER_SELECTOR auf Anpassungsmodus eingestellt. Ein Zurücksetzen des Gerätes auf Werkseinstellungen beeinflusst den IDENT_NUMBER_SELECTOR nicht.

4.3.2.1 Geräte-Identnummern für Liquiline pHORP

IDENT_NUMBER_SELECTOR	Identnummer	Auswahl	GSD Datei
0	9750_h	0x9750 (Analyzer Profile-GSD, MBP)	PA139750.GSD
127	*	Anpassungsmodus	Automatisch
128	1565_h	Liquiline pHORP	EH3x1565.GSD

4.3.2.2 Geräte-Identnummern für Liquiline Cond

IDENT_NUMBER_SELECTOR	Identnummer	Auswahl	GSD Datei
0	9750_h	0x9750 (Analyzer Profile-GSD, MBP)	PA139750.GSD
127	*	Anpassungsmodus	Automatisch
128	1566_h	Liquiline Cond CM42	EH3x1566.GSD

4.3.2.3 Geräte-Identnummern für Liquiline Oxygen

IDENT_NUMBER_SELECTOR	Identnummer	Auswahl	GSD Datei
0	9750_h	0x9750 (Analyzer Profile-GSD, MBP)	PA139750.GSD
127	*	Anpassungsmodus	Automatisch
128	1567_h	Liquiline Oxygen CM42	EH3x1567.GSD

4.3.3 PROFIBUS-Adresse

Die PROFIBUS-Adresse dient der eindeutigen Identifizierung eines Teilnehmers in einem funktionalen PROFIBUS-Netzwerk. Von daher darf diese pro Gerät nur einmal vergeben sein. Bei der Erstinbetriebnahme ist die PROFIBUS-Adresse 126 eingestellt. Sie sollte beim Einrichtungsvorgang auf die Arbeitsadresse justiert werden.

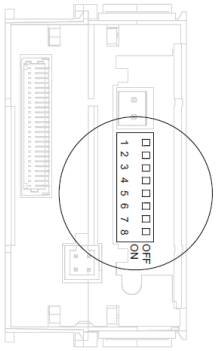
Das Liquiline M CM42 bietet die folgenden Möglichkeiten zu Einstellung der PROFIBUS-Adresse:

- Über DIP-Schalter im Gerät
- Über das Setup-Gerätemenü
- Über den PROFIBUS-Master mittels des DPV1-Set_Slave_Add-Dienstes

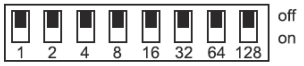
Im folgenden Abschnitt werden die verschiedenen Einstellmöglichkeiten beschrieben.

4.3.3.1 Einstellung über DIP-Schalter

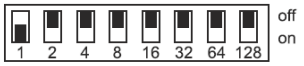
Hierzu müssen Sie das Gehäuse öffnen, wie in Kapitel 4.2.1 beschrieben. Am CPU-Modul können die DIP-Schalter, wie im folgenden Beispiel dargestellt, im Binärformat codiert eingestellt werden:



- **0**:



- **1**:



- **18** (2+16):

Hinweis

Bitte beachten Sie, dass der an den DIP-Schaltern eingestellte Zahlenwert erst nach einer Zeitspanne von 10 Sekunden vom Gerät übernommen wird. Dies verhindert versehentliches Umschalten auf Adressen, die nicht gewünscht sind.

Über die DIP-Schalter kann festgelegt werden, ob eine Adressänderung per Set_Slave_Add-Dienst oder über das Gerätemenü ermöglicht werden soll. Die Mechanismen werden in den folgenden Abschnitten beschrieben.

Aktivierung der Funktion zur Adressänderung über Set_Slave_Add-Dienst oder Gerätemenü:

Die Funktion zur Adressänderung wird aktiviert, wenn Sie an den DIP-Schaltern eine Bus-Adresse größer 125 einstellen. Das Gerät wechselt darauf hin auf Adresse 126, die höchstmögliche PROFIBUS-Adresse. Eine Korrektur der Bus-Adresse kann nun vom PROFIBUS-Master über den DPV1-Dienst Set_Slave_Add (Wertebereich 0..125) oder über das CM42-Gerätemenü (Wertebereich 0..126) vorgenommen werden.

Deaktivierung der Funktion zur Adressänderung über Set_Slave_Add-Dienst oder Gerätemenü:

Die Funktion zur Adressänderung wird deaktiviert, wenn Sie an den DIP-Schaltern eine Adresse im Bereich 0..125 einstellen. In diesem Fall wird die über die DIP-Schalter eingestellte Bus-Adresse vom Gerät übernommen; eine Korrektur über den Set_Slave_Add-Dienst oder das Gerätemenü ist nicht möglich.

Hinweis

Der Set_Slave_Add-Dienst bietet die Möglichkeit, eine zukünftige Änderung der Bus-Adresse über das Gerätemenü und den PROFIBUS-Master zu unterbinden. Um diesen Slave-Address-Lock-Zustand aufzuheben gehen Sie wie folgt vor:

Ändern Sie die Bus-Adresse über die DIP-Schalter auf einen Wert kleiner oder gleich 125. Warten Sie eine Zeitspanne von 10 Sekunden, bis der an den DIP-Schaltern eingestellte Zahlenwert vom Gerät übernommen wird. Stellen Sie im Anschluss daran die Adresse auf einen Wert größer oder gleich 126 ein. Der Address-Lock-Zustand wurde aufgehoben und das Gerät ist über Adresse 126 erreichbar.

Über den PROFIBUS-Dienst Busadresse zurücksetzen (FACTORY_RESET_2712) kann der Slave-Address-Lock-Zustand ebenfalls aufgehoben werden. Lesen Sie hierzu Kapitel 6.4.1.

4.3.3.2 Einstellung über das Gerätemenü

Pfad	Setup/Allg. Einstellungen/Bus-Adresse
Format	Numerisch
Wertebereich	[0..126]

Sofern die DIP-Schaltereinstellung im Gerät eine Adresse größer 125 aufweist, können Sie über das Gerätemenü jede beliebige Software-Adresse zwischen 0..126 einstellen. Bei einer DIP-Schalterstellung kleiner oder gleich 125 ist der Menüpunkt Bus-Adresse nicht editierbar.

Hinweis

Im Auslieferungszustand ist die Einstellung der Bus-Adresse über das Gerätemenü möglich, jedoch kann eine Umstellung auf Hardwareadressierung oder der Slave-Address-Lock-Zustand dazu führen, dass der Menüeintrag Bus-Adresse im Gerätemenü nicht editiert werden kann. Lesen Sie hierzu den entsprechenden Hinweis in Kapitel 4.3.3.1, um die Softwareadressierung zu reaktivieren.

4.3.3.3 Einstellung über Dienst DPV1-Set_Slave_Add

Der PROFIBUS-Master kann die Bus-Adresse über den Dienst Set_Slave_Add im Bereich 0..125 ändern, sofern sich das Gerät in einem Softwareadressierungsmodus befindet.

Hinweis

Im Auslieferungszustand ist die Einstellung der Bus-Adresse über den Set_Slave_Add-Dienst möglich, jedoch kann eine Umstellung auf Hardwareadressierung oder der Slave-Address-Lock-Zustand dazu führen, dass eine PROFIBUS-Master-Anforderung Set_Slave_Add fehlschlägt. Lesen Sie hierzu den entsprechenden Hinweis in Kapitel 4.3.3.1, um die Softwareadressierung zu reaktivieren.

4.4 Gerätetausch/Kompatibilitätsmodus

Um den Betrieb an einem Leitsystem, welches für die ältere Liquiline M Gerätegeneration eingerichtet ist zu ermöglichen, kann sich das Liquiline M CM42 Ver. 2.xx hinsichtlich der DPV0- und DPV1-Grundfunktionalitäten kompatibel zur Vorgängergeneration Liquiline M CM42 Ver. 1.xx verhalten.

Der Kompatibilitäts-Leistungsumfang beinhaltet:

- Abfrage der Diagnose
- Zyklischer Datenaustausch
- Akzeptanz der GSD-Dateien des Vorgängermodells

Zur Aktivierung muss der Physical Block Parameter IDENT_NUMBER_SELECTOR auf einen der folgenden beiden Werte eingestellt sein:

- IDENT_NUMBER_SELECTOR = 127 (Anpassungsmodus, automatische Übernahme der Identnummer)
- IDENT_NUMBER_SELECTOR = 129 (Kompatibilitätsmodus Liquiline M CM42 Ver. 1.xx)

Die Einstellung des Parameters IDENT_NUMBER_SELECTOR ist sowohl über PROFIBUS als auch über das Setup-Gerätemenü möglich. Hierzu ist einer der beiden Modi zu wählen, wie in der folgenden Tabelle dargestellt.

Pfad	Setup/Allg. Einstellungen/Ident number selector		
Format	Enumeration		
Auswahlliste (reduziert)	Anpassungsmodus	IDENT_NUMBER_SELECTOR = 127 Automatische Auswahl	
	Liquiline M CM42 XXXX 1543_h/1544_h/$154B_h$	IDENT_NUMBER_SELECTOR = 129 Kompatibilitätsmodus Liquiline M CM42 Ver. 1.xx	

4.4.1.1 Geräte-Identnummern für Liquiline M CM42 Ver. 1.xx (pH/ORP)

IDENT_NUMBER_SELECTOR	Identnummer	Auswahl	GSD Datei
0	9750h	0x9750 (Analyzer Profile GSD, MBP)	PA139750.GSD
127	*	Anpassungsmodus	Automatisch
129	1543_h	Liquiline M CM42 pH/ORP	EH3X1543.GSD

4.4.1.2 Geräte-Identnummern für Liquiline M CM42 Ver. 1.xx (Cond)

IDENT_NUMBER_SELECTOR	Identnummer	Auswahl	GSD Datei
0	9750h	0x9750 (Analyzer Profile GSD, MBP)	PA139750.GSD
127	*	Anpassungsmodus	Automatisch
129	1544h	Liquiline M CM42 Cond	EH3X1544.GSD

4.4.1.3 Geräte-Identnummern für Liquiline M CM42 Ver. 1.xx (DOxygen)

IDENT_NUMBER_SELECTOR	Identnummer	Auswahl	GSD Datei
0	9750h	0x9750 (Analyzer Profile GSD, MBP)	PA139750.GSD
127	*	Anpassungsmodus	Automatisch
129	154Bh	Liquiline M CM42 DOxygen CM42	EH3X154B.GSD

4.4.1.4 Liquiline M CM42 Ver. 1.xx GSD-Dateien

Datei	Typ	Anmerkungen
EH3X1543.GSD	herstellerspezifisch	Physical Block DEVICE_ID → "Liquiline M CM42" (Liquiline M CM42 pH/ORP)
EH3X1544.GSD	herstellerspezifisch	Physical Block DEVICE_ID → "Liquiline M CM42" (Liquiline M CM42 Cond)
EH3X154B.GSD	herstellerspezifisch	Physical Block DEVICE_ID → "Liquiline M CM42" (Liquiline M CM42 DOxygen)
PA139750.GSD	generisch	Analyser Profile for MBP Devices[3]

[3] Liquiline M CM42 Ver. 2.xx unterstützt im Liquiline M CM42 vers. 1.xx-Kompatibilitätsmodus die Module Analog Input (AI) und EMPTY_MODULE

4.5 Zyklischer Datenaustausch

Im zyklischen Datenaustausch sendet das Liquiline M CM42 Prozessdaten an das Leitsystem über den DPV0-Service DataExchange. Um diesen einzuleiten muss ein PROFIBUS-Master der Klasse 1 die folgenden Sequenzen in der angegebenen Reihenfolge abarbeiten:

1. Senden der Parametrierung über das DPV0-Parametertelegramm
2. Senden der Modul-Konfiguration über das DPV0-Konfigurationstelegramm
3. Zyklische Abfrage der Prozessdaten über den Dienst DPV0-DataExchange

Die weiteren Unterkapitel beschreiben die Inhalte der Parametrierung und der Konfiguration durch den Master, sowie die Interpretation der vom Master empfangenen Prozessdaten.

4.5.1 DPV0-Parametertelegramm

Octet	Name	Bit	Name	Werte – Beschreibung
1	Station_status	0..2	reserved	0
		3	WD_On	Watchdog aktiv (0/1)
		4	Freeze_Req	Freeze aktiv (0/1)
		5	Sync_Req	(0, n.v.)
		6	Unlock_Req	Master unlock (0/1)
		7	Lock_Req	Master lock (0/1)
2	WD_Fact_1			$T_{Watchdog}$ = 10 ms * WD_Fact_1 * WD_Fact_2 Nach Ablauf von $T_{Watchdog}$ beendet der PROFIBUS-Slave die zyklische Verbindung zum Master
3	WD_Fact_2			
4	TSDR			Zeit in t_{Bit}, die der PROFIBUS-Slave nach einem Master-Request vor dem Initiieren des Telegramm-Sendevorgangs warten muss.
5	Identnumber		High byte	ID-H-CM42-V.2 (15_h) / ID-H-CM42-V.1-Komp (15_h) / ID-H-Profil (97_h)
6	Identnumber		Low byte	▪ ID-L-CM42-V.2 (65_h) / ID-L-CM42-V.1-Komp (43_h) / ID-L-Profil (50_h) pH/ORP-Sensoren ▪ ID-L-CM42-V.2 (66_h) / ID-L-CM42-V.1-Komp (44_h) / ID-L-Profil (50_h) Leitfähigkeits-Sensoren ▪ ID-L-CM42-V.2 (67_h) / ID-L-CM42-V.1-Komp ($4B_h$) / ID-L-Profil (50_h) Sauerstoff-Sensoren
7	Group_Ident	0	Group 1	
		1	Group 2	
		2	Group 3	
		3	Group 4	
		4	Group 5	

Octet	Name	Bit	Name	Werte – Beschreibung
		5	Group 6	
		6	Group 7	
		7	Group 8	
8	DPV1_Status_1			00_h
9	DPV1_Status_2			00_h
10	DPV1_Status_3			Prm_Structure (vorh./n.v.) 00_h: Prm_Structure (Octets 11..15) wird nicht gesendet 08_h: Prm_Structure (Octets 11..15) im Parametertelegramm enthalten
11	User_param			05_h: Structure_Length
12				41_h: Structure_Type
13				00_h: Slot_Number
14				00_h: Reserved
15	Ext. User_param			PRM_COND 00_h: Classic Status 01_h: Condensed Status

Hinweis

Sendet der PROFIBUS-Master das Parametertelegramm ohne Prm_Structure (Octets 11..15), so wird während des zyklischen Datenaustauschs der Classic Status ausgegeben.

4.5.2 DPV0-Konfigurationstelegramm

Im Konfigurationstelegramm werden die AI-Module selektiert, deren Prozesswerte während des zyklischen Datenaustauschs an das Leitsystem gesendet werden.

Die Konfiguration ist bei Verwendung einer herstellerspezifischen GSD-Datei im speziellen Format vorzunehmen, wie in den folgenden Tabellen dargestellt.

Die Tabellen enthalten ebenfalls die Prozesswerte der jeweiligen AI-Module für den Auslieferungszustand oder nach Zurücksetzen auf Werkseinstellungen. Eine Selektierung der Prozesswerte ist durch Überschreiben der Kanalzuordnung jederzeit möglich. Weitere Informationen hierzu entnehmen Sie bitte Kapitel 6.2.

4.5.2.1 DPV0 Konfiguration für pH/ORP-Sensoren

Slot	GSD-Module	Index	Modulkennung	Modulname	Werkseinstellung		
					Prozesswert	Einheit	ATB-Kanal
1	AI: OUT Analog Input	0	$42_h,84_h,81_h,81_h$	AI01	pH (Hauptmesswert)	pH	1
2	AI: OUT Analog Input	4	$42_h,84_h,81_h,81_h$	AI02	Temperatur	°C	2
3	AI: OUT Analog Input	8	$42_h,84_h,81_h,81_h$	AI03	Rohmesswert	mV	3
4	AI: OUT Analog Input	12	$42_h,84_h,81_h,81_h$	AI04	Gedämpfter Rohwert	mV	4
5	AI: OUT Analog Input	16	$42_h,84_h,81_h,81_h$	AI05	pH	pH	5
6	AI: OUT Analog Input	20	$42_h,84_h,81_h,81_h$	AI06	Redox mV	mV	6

4.5.2.2 DPV0 Konfiguration für Leitfähigkeits-Sensoren

Slot	GSD-Module	Index	Modulkennung	Modulname	Werkseinstellung		
					Prozesswert	Einheit	ATB-Kanal
1	AI: OUT Analog Input	0	42_h,84_h,81_h,81_h	AI01	Leitfähigkeit (Hauptmesswert)	mS/cm	1
2	AI: OUT Analog Input	4	42_h,84_h,81_h,81_h	AI02	Temperatur	°C	2
3	AI: OUT Analog Input	8	42_h,84_h,81_h,81_h	AI03	Unkompensierte Leitfähigkeit	mS/cm	3
4	AI: OUT Analog Input	12	42_h,84_h,81_h,81_h	AI04	Leitfähigkeit	mS/cm	4
5	AI: OUT Analog Input	16	42_h,84_h,81_h,81_h	AI05	Spez. Widerstand	MΩ*cm	5
6	AI: OUT Analog Input	20	42_h,84_h,81_h,81_h	AI06	Konzentration	%	6

4.5.2.3 DPV0 Konfiguration für Sauerstoff-Sensoren

Slot	GSD-Module	Index	Modulkennung	Modulname	Werkseinstellung		
					Prozesswert	Einheit	ATB-Kanal
1	AI: OUT Analog Input	0	42_h,84_h,81_h,81_h	AI01	Konzentration Flüssigkeit (Hauptmesswert)	mg/l	1
2	AI: OUT Analog Input	4	42_h,84_h,81_h,81_h	AI02	Temperatur	°C	2
3	AI: OUT Analog Input	8	42_h,84_h,81_h,81_h	AI03	Kompensations-strom	nA	3
4	AI: OUT Analog Input	12	42_h,84_h,81_h,81_h	AI04	Umgebungsdruck	hPa	4
5	AI: OUT Analog Input	16	42_h,84_h,81_h,81_h	AI05	Partialdruck	hPa	5
6	AI: OUT Analog Input	20	42_h,84_h,81_h,81_h	AI06	Sättigung	%	6

Hinweis

Um die Anzahl an zyklischen Prozessdaten zu reduzieren, können einzelne AI-Module durch den Einsatz des Platzhalter-Moduls mit der Kennung "EMPTY_MODUL" (0x00) anstelle der regulären Modulkennung deselektiert werden.

4.5.3 Interpretation der zyklischen Prozessdaten

Für jedes selektierte AI-Modul im Konfigurationstelegramm wird während des zyklischen Datenaustauschs ein Block, bestehend aus Prozesswert und Status an den Master gesendet.

4.5.3.1 Aufbau des AI-Modul-Datenblocks

AI-Modul-Blockindex [1..6]
n = 5 x AI-Modul-Blockindex

Index	Inhalt
n+0	Prozesswert 32 Bit Gleitkomazahl nach IEEE-754
n+1	
n+2	
n+3	
n+4	Condensed Status (Werkseinstellung) Classic Status (optional)

4.5.3.2 Condensed Status-Dekodierung

Jeder Prozesswert ist mit einem Status verknüpft, der eine Aussage über die Gültigkeit und damit Verwendbarkeit dieses Prozesswertes gibt. Die Codierung des Status entspricht bei Verwendung der herstellerspezifischen GSD-Datei der Definition des PA-Profils 3.02 für Condensed Status. Eine Umschaltung der Statusausgabe auf Classic ist bei Verwendung der Analyzer Profile GSD-Datei oder einer der Liquiline M CM42 Ver. 1.xx GSD-Dateien möglich (s. Kap. 6.3.1).

Condensed status code	Quality	Substatus	Limits	Description
0 (00_h)	Bad	Non specific	OK	Dieser Status wird nur von Proxys verwendet, die dadurch mitteilen, dass ein Gerät nicht kommuniziert.
35 (23_h)	Bad	Passivated	OK	Dieser Status wird vom Gerät gesetzt wenn kein Prozesswert konfiguriert wurde oder aus anderen Gründen nicht zur Verfügung gestellt werden kann. Es werden keine Diagnoseereignisse über den Slave_Diag service gemeldet.
36 (24_h)	Bad	Maintenance Alarm	OK	Der Wert ist nicht verwendbar aufgrund eines Fehlers.
37 (25_h)	Bad		LO_LIM	
38 (26_h)	Bad		HI_LIM	
39 (27_h)	Bad		CONSTANT	
40 (28_h)	Bad	Process related	OK	Der Wert ist nicht verwendbar aufgrund einer dem Prozess zuzuordnenden Ursache.
41 (29_h)	Bad		LO_LIM	
42 ($2A_h$)	Bad		HI_LIM	

Condensed status code	Quality	Substatus	Limits	Description
43 ($2B_h$)	Bad		CONSTANT	
60 ($3C_h$)	Bad	Function Check	OK	Der Wert ist nicht verwendbar aufgrund eines Anwendereingriffs (z.B. Kalibrierung).
61 ($3D_h$)	Bad		LO_LIM	
62 ($3E_h$)	Bad		HI_LIM	
63 ($3F_h$)	Bad		CONSTANT	
75 ($4B_h$)	Uncertain	Substitute set	OK	Ein Ersatzwert ist konfiguriert und wird verwendet. Dieser Status wird durch die Fail-Safe Logik eines Funktionsblocks gesetzt.
79 ($4F_h$)	Uncertain	Initial value	OK	Initialer Wert, solange kein Messwert verfügbar ist.
104 (68_h)	Uncertain	Maintenance demanded	OK	Die Verwendbarkeit des Werts ist abhängig von der Applikation und muss vom Anwender bewertet werden.
105 (69_h)	Uncertain		LO_LIM	
106 ($6A_h$)	Uncertain		HI_LIM	
107 ($6B_h$)	Uncertain		CONSTANT	
115 (73_h)	Uncertain	Simulated value, Start	OK	Signalisiert den Beginn der Simulation des Ausgangswerts eines Funktionsblocks.
116 (74_h)	Uncertain	Simulated value, End	OK	Signalisiert das Ende der Simulation des Ausgangswerts eines Funktionsblocks. Der Status bleibt bis 10 Sekunden nach dem Ende der Simulation aktiv. Solange der Status aktiv ist, ist der Wert nicht verwendbar.
117 (75_h)	Uncertain		LO_LIM	
118 (76_h)	Uncertain		HI_LIM	
119 (77_h)	Uncertain		CONSTANT	
120 (78_h)	Uncertain	Process related	OK	Die Bedingungen des Prozess sind außerhalb des Betriebsbereichs des Geräts. Der Wert kann eine eingeschränkte Qualität oder Genauigkeit aufweisen.
121 (79_h)	Uncertain		LO_LIM	
122 ($7A_h$)	Uncertain		HI_LIM	
123 ($7B_h$)	Uncertain		CONSTANT	
128 (80_h)	Good		OK	
129 (81_h)	Good		LO_LIM	
130 (82_h)	Good		HI_LIM	
131 (83_h)	Good		CONSTANT	
132 (84_h)	Good	Update event	OK	Der Wert ist verwendbar. Der Funktion Block hat ein Update event ausgelöst, d.h. ein Parameter des Blocks mit statischer Speicherklasse wurde geändert.
133 (85_h)	Good		LO_LIM	
134 (86_h)	Good		HI_LIM	

Condensed status code	Quality	Substatus	Limits	Description
135 (87_h)	Good		CONSTANT	
136 (88_h)	Good	Active advisory	OK	Der Wert ist verwendbar und der Block hat einen aktiven Alarm, z.B. wenn der OUT-Wert eines AI-Blocks das HI_LIM überschreitet.
137 (89_h)	Good		LO_LIM	
138 ($8A_h$)	Good		HI_LIM	
139 ($8B_h$)	Good		CONSTANT	
140 ($8C_h$)	Good	Active critical	OK	Der Wert ist verwendbar und der Block hat einen aktiven Alarm.
141 ($8D_h$)	Good		LO_LIM	
142 ($8E_h$)	Good		HI_LIM	
143 ($8F_h$)	Good		CONSTANT	
160 ($A0_h$)	Good	Initiate fail safe	OK	
161 ($A1_h$)	Good		LO_LIM	
162 ($A2_h$)	Good		HI_LIM	
163 ($A3_h$)	Good		CONSTANT	
164 ($A4_h$)	Good	Maintenance required	OK	
165 ($A5_h$)	Good		LO_LIM	
166 ($A6_h$)	Good		HI_LIM	
167 ($A7_h$)	Good		CONSTANT	
168 ($A8_h$)	Good	Maintenance demanded	OK	
169 ($A9_h$)	Good		LO_LIM	
170 (AA_h)	Good		HI_LIM	
171 (AB_h)	Good		CONSTANT	
188 (BC_h)	Good	Function check	OK	Der Wert ist verwendbar und wird aufgrund eines Anwendereingriffs auf einem konstanten Wert gehalten.
189 (BD_h)	Good		LO_LIM	
190 (BE_h)	Good		HI_LIM	
191 (BF_h)	Good		CONSTANT	

Hinweis

Prüfen Sie stets die Verwendbarkeit des Messwertes anhand der Quality. Ein Status ≥ 128 zeigt einen verwendbaren Wert an.

5 Diagnose

In Abhängigkeit von Geräteverhalten und Betriebszustand speichert das Liquiline M CM42 Diagnoseinformationen bit-codiert in einer Parameterliste, auf die wie folgt zugegriffen werden kann:

- Durch Auslesen der entsprechenden Diagnose-Parameter im Physical Block
- Über DPV0-GetDiagnostics Service

Die im Physical Block abgelegten Parameter DIAGNOSIS, DIAGNOSIS_EXTENSION beinhalten die Bitkombinationen der Standard- und der erweiterten Diagnose. Zusätzliche, herstellerspezifische Diagnosebits werden im Parameter DEVICE_DIAGNOSIS persistiert. Der Parameter GLOBAL_STATUS stellt die Information bereit, in welcher NAMUR NE107 Fehlerklasse Diagnoseereignisse aufgetreten sind.

5.1 NE107 Fehlerklassen

Jedes Diagnose-Ereignis ist einer Fehlerklasse nach NAMUR NE107 zugeordnet:

Klasse	Bedeutung nach NE107
M	"Maintenance required" (Wartungsbedarf)
F	"Failure" (Ausfall)
S	"Out of specification, Invalid process condition" (außerhalb Spezifikation)
C	"Function check" (Funktionskontrolle)
(OK)	"GOOD"

Eine vollständige Liste der Diagnose-Ereignisse finden Sie im Kapitel 9.6

5.2 Diagnoseabfrage über Parameterzugriff

5.2.1 Adressierung

Auf die Diagnoseparameter in der folgenden Tabelle kann über den asynchronen DPV1-Read Service zugegriffen werden.

Diagnoseparameter des Physical Blocks				
Parameter	**Slot**	**Rel. Index**	**Abs. Index**	**Länge (Bytes)**
GLOBAL_STATUS	0	39	55	2
DIAGNOSIS	0	13	29	4
DIAGNOSIS_EXTENSION	0	14	30	6
DEVICE_DIAGNOSIS	0	67	83	58

Hinweis

DEVICE_DIAGNOSIS enthält die vollständigen Inhalte beiden Parameter DIAGNOSIS und DIAGNOSIS_EXTENSION, so dass diese nicht separat gelesen werden müssen.

5.2.2 Inhalte

5.2.2.1 Physical Block Parameter GLOBAL_STATUS

Bit	Beschreibung
0	**F** – Failure (NE107, s. Kap. 5.1)
1	**M** – Maintenance required (NE107, s. Kap. 5.1)
2	**C** – Function check (NE107, s. Kap. 5.1)
3	**S** – Out of specification (NE107, s. Kap. 5.1)
4..15	n.v.

5.2.2.2 Physical Block Parameter DIAGNOSIS

Byte Index	Bit	Bezeichnung	Beschreibung
0	0	Hardware failure electronics	GSD-Unit_Diag_Bit(24)
	1	Hardware failure mechanics	GSD-Unit_Diag_Bit(25)
	2	Motor-temperature too high	GSD-Unit_Diag_Bit(26)
	3	Electronic temperature too high	GSD-Unit_Diag_Bit(27)
	4	Memory error	GSD-Unit_Diag_Bit(28)
	5	Failure in measurement	GSD-Unit_Diag_Bit(29)
	6	Device not initialized	GSD-Unit_Diag_Bit(30)
	7	Self calibration failed	GSD-Unit_Diag_Bit(31)
1	0	Zero point error (limit pos.)	GSD-Unit_Diag_Bit(32)
	1	Power supply failed	GSD-Unit_Diag_Bit(33)
	2	Configuration not valid	GSD-Unit_Diag_Bit(34)
	3	Re-start-up carried out	GSD-Unit_Diag_Bit(35)
	4	Warm-start-up carried out	GSD-Unit_Diag_Bit(36)

Byte Index	Bit	Bezeichnung	Beschreibung
	5	**M** – Maintenance required (NE107, s. Kap. 5.1)	GSD-Unit_Diag_Bit(37)
	6	Characterization invalid	GSD-Unit_Diag_Bit(38)
	7	Invalid ident number	GSD-Unit_Diag_Bit(39)
2	0	**F** – Failure (NE107, s. Kap. 5.1)	GSD-Unit_Diag_Bit(40)
	1	Maintenance demanded	GSD-Unit_Diag_Bit(41)
	2	**C** – Function check (NE107, s. Kap. 5.1)	GSD-Unit_Diag_Bit(42)
	3	**S** – Out of specification (NE107, s. Kap. 5.1)	GSD-Unit_Diag_Bit(43)
3	7	Extension available	GSD-Unit_Diag_Bit(55)

5.2.2.3 Physical Block Parameter DIAGNOSIS_EXTENSION

Die folgende Tabelle enthält Sammel-Fehlercodes des PROFIBUS Standards. Eine detailliertere, gerätespezifische Diagnose ist über den Parameter DEVICE_DIAGNOSIS (s. Kap. 5.2.2.4) möglich.

Byte Index	Bit	Bezeichnung	Beschreibung
0	0	Temperature sensor failure	GSD-Unit_Diag_Bit(56)
	1	Sensor communication failure	GSD-Unit_Diag_Bit(57)
	2	Sensor failure	GSD-Unit_Diag_Bit(58)
	3	Wrong sensor type	GSD-Unit_Diag_Bit(59)
	4	SCS alarm (Sensor check system)	GSD-Unit_Diag_Bit(60)
	5	Sensor alarm	GSD-Unit_Diag_Bit(61)
	6	SCS warning (Sensor check system)	GSD-Unit_Diag_Bit(62)
	7	Sensor warning	GSD-Unit_Diag_Bit(63)
1	0	Calibration active	GSD-Unit_Diag_Bit(64)
	1	Internal sensor failure	GSD-Unit_Diag_Bit(65)
	2	Module communication failure	GSD-Unit_Diag_Bit(66)
	3	Module failure	GSD-Unit_Diag_Bit(67)
	4	Module mismatch	GSD-Unit_Diag_Bit(68)
	5	Internal module failure	GSD-Unit_Diag_Bit(69)
	6	Simulation active	GSD-Unit_Diag_Bit(70)

Byte Index	Bit	Bezeichnung	Beschreibung
	7	Hold active	GSD-Unit_Diag_Bit(71)
2	0	Power bad	GSD-Unit_Diag_Bit(72)
	1	Not supported	GSD-Unit_Diag_Bit(73)
	2	Limit alarm	GSD-Unit_Diag_Bit(74)
	3	Limit warning	GSD-Unit_Diag_Bit(75)
	4	Param menu active	GSD-Unit_Diag_Bit(76)
	5	Diag menu active	GSD-Unit_Diag_Bit(77)
	6	Software version incompatible	GSD-Unit_Diag_Bit(78)
	7	Internal software failure	GSD-Unit_Diag_Bit(79)
3	0	Software configuration failure	GSD-Unit_Diag_Bit(80)
	1	Software framework failure	GSD-Unit_Diag_Bit(81)
	2	Initialisation in progress	GSD-Unit_Diag_Bit(82)
	3	Initialisation failure	GSD-Unit_Diag_Bit(83)
	4	General operation failure	GSD-Unit_Diag_Bit(84)
	5	General operation warning	GSD-Unit_Diag_Bit(85)
	6	Internal process value failure	GSD-Unit_Diag_Bit(86)
	7	Process value limit alarm	GSD-Unit_Diag_Bit(87)
4	0	Process value limit warning	GSD-Unit_Diag_Bit(88)
	1	Process value alarm	GSD-Unit_Diag_Bit(89)
	2	Process value warning	GSD-Unit_Diag_Bit(90)
	3..7	0 (not supp. by GSD)	GSD-Unit_Diag_Bit(91..95)
5	0..7	0 (not supp. by GSD)	GSD-Unit_Diag_Bit(96..103)

5.2.2.4 Physical Block Parameter DEVICE_DIAGNOSIS

Byte Index	Bit	Bezeichnung	Beschreibung
0..3	0..31	Entspricht Physical Block Parameter DIAGNOSIS (s. Kap. 5.2.2.2)	GSD-Unit_Diag_Bit(24..55)
4..9	32..79	Entspricht Physical Block Parameter DIAGNOSIS_EXTENSION (s. Kap. 5.2.2.3)	GSD-Unit_Diag_Bit(56..103)
10	80..87	Entspricht Diagnostic codes [11:x] (s. Kap. 9.6)	GSD-Unit_Diag_Bit(104..)

Byte Index	Bit	Bezeichnung	Beschreibung
..		..	..
57		Entspricht Diagnostic codes [58:x] (s. Kap. 9.6)	GSD-Unit_Diag_Bit(..487)

5.3 Diagnoseabfrage über GetDiagnostics Service

Die Abfrage der Diagnose über den GetDiagnostics-Service durch den Master ist jederzeit möglich. Der Umfang der Diagnosenachricht ist vom Betriebszustand des Gerätes abhängig. Folgende Meldungstypen können generiert werden:

GetDiagnostics-Responses		
Typ	**Umfang [Octets]**	**Bemerkungen**
Standarddiagnose	1..6	PROFIBUS-Standard-Diagnose
Erweiterte Diagnose	1..20	PROFIBUS-Standard-Diagnose + Parameter DIAGNOSIS + Parameter DIAGNOSIS_EXTENSION
Herstellerspezifische Gerätediagnose	1..68	PROFIBUS-Standard-Diagnose + Parameter DIAGNOSIS + Parameter DIAGNOSIS_EXTENSION + Parameter DEVICE_DIAGNOSIS [10..57]

Hinweis

Tritt während des zyklischen Datenaustauschs ein Diagnoseereignis auf, so wird das Liquiline M CM42 die Prozessdaten an den Master mit hoher Priorität versenden. PROFIBUS-Master der Klasse 1 werden über diesen Mechanismus aufgefordert den GetDiagnostics-Service auszuführen.

Octet	Name	Bit	Bezeichnung	Beschreibung
1	Station_status_1	0	Station_Non_Existent	Station existiert nicht
		1	Station_Not_Ready	Gerät ist nicht für den Datenaustausch bereit
		2	Cfg_Fault	Fehler im Konfigurationstelegramm
		3	Ext_Diag	Im Telegramm folgt eine erweiterte Diagnose = 1: Severity = Alarm (Failure / Maintenance Alarm); = 0: Severity = Ok oder Status/Warnung
		4	Not_Supported	Die angeforderte Funktion wird vom Gerät nicht unterstützt.

Octet	Name	Bit	Bezeichnung	Beschreibung
		5	Invalid_Slave_Response	Ungültige Antwort vom Gerät (wird vom Master gesetzt)
		6	Prm_Fault	Fehler im Parametertelegramm
		7	Master_Lock	Gerät ist bereits mit einem anderen Master verbunden
2	Station_status_2	0	Prm_Req	Slave muss neu parametriert werden
		1	Stat_Diag	Statische Diagnose
		2	--	1
		3	WD_On	Watchdog aktiv
		4	Freeze_Mode	Freeze Kommando erhalten
		5	Sync_Mode	Sync Kommando erhalten
		6	--	0
		7	Deactivated	Gerät ist deaktiviert (wird vom Master gesetzt)
3	Station_status_3	0..6	--	0
		7	Ext_Diag_Overflow	Speicherplatz im Telegramm reicht nicht aus.
4	Diag_Master_Add			Adresse des Masters nach Parametrierung Werkseinstellung ist 255 (0xFF)
5	Ident_Number_High			ID-H-CM42-V2 (15_h) / ID-H-CM42-V1-Komp (15_h) / ID-H-Profil (97_h)
6	Ident_Number_Low			▪ ID-L-CM42-V2 (65_h) / ID-L-CM42-V1 (43_h) / ID-L-Profil (50_h) pH/ORP-Sensoren ▪ ID-L-CM42-V2 (66_h) / ID-L- CM42-V1 (44_h) / ID-L-Profil (50_h) Leitfähigkeits-Sensoren ▪ ID-L-CM42-V2 (67_h) / ID-L- CM42-V1 ($4B_h$) / ID-L-Profil (50_h) Sauerstoff-Sensoren
7	Header_Octet		None: Standard diagnosis $0E_h$: Extended diagnosis $3E_h$: Man.-specific diagnosis	Kennung: Gerätebezogene Diagnose mit Längenangabe des Diagnoseblocks: ▪ Standard-Diagnose ▪ Erweiterte Diagnose ▪ Herstellerspezifische Diagnose
8	Status_Type		FE_h	Highest Manufacturer specific status
9	Slot_Number			Herkunft der Statusmeldung

Octet	Name	Bit	Bezeichnung	Beschreibung
10	Specifier	0	Error appears	GSD-Unit_Diag_Bit(16)
		1	Error disappears	GSD-Unit_Diag_Bit(17)
11	Physical Block DIAGNOSIS[0]	0	Hardware failure electronics	GSD-Unit_Diag_Bit(24)
		1	Hardware failure mechanics	GSD-Unit_Diag_Bit(25)
		2	Motor-temperature too high	GSD-Unit_Diag_Bit(26)
		3	Electronic temperature too high	GSD-Unit_Diag_Bit(27)
		4	Memory error	GSD-Unit_Diag_Bit(28)
		5	Failure in measurement	GSD-Unit_Diag_Bit(29)
		6	Device not initialized	GSD-Unit_Diag_Bit(30)
		7	Self calibration failed	GSD-Unit_Diag_Bit(31)
12	Physical Block DIAGNOSIS[1]	0	Zero point error (limit pos.)	GSD-Unit_Diag_Bit(32)
		1	Power supply failed	GSD-Unit_Diag_Bit(33)
		2	Configuration not valid	GSD-Unit_Diag_Bit(34)
		3	Re-start-up carried out	GSD-Unit_Diag_Bit(35)
		4	Warm-start-up carried out	GSD-Unit_Diag_Bit(36)
		5	**M** – Maintenance required (NE107, s. Kap. 5.1)	GSD-Unit_Diag_Bit(37)
		6	Characterization invalid	GSD-Unit_Diag_Bit(38)
		7	Invalid ident number	GSD-Unit_Diag_Bit(39)
13	Physical Block DIAGNOSIS[2]	0	**F** – Failure of the device (NE107, s. Kap. 5.1)	GSD-Unit_Diag_Bit(40)
		1	Maintenance demanded	GSD-Unit_Diag_Bit(41)
		2	**C** – Function check (NE107, s. Kap. 5.1)	GSD-Unit_Diag_Bit(42)
		3	**S** – Invalid process condition (NE107, s. Kap. 5.1)	GSD-Unit_Diag_Bit(43)
14	Physical Block DIAGNOSIS[3]	7	Extension available	GSD-Unit_Diag_Bit(55)
15	Physical Block DIAGNOSIS_EXTENSION[0]	0	Temperature sensor failure	GSD-Unit_Diag_Bit(56)
		1	Sensor communication failure	GSD-Unit_Diag_Bit(57)
		2	Sensor failure	GSD-Unit_Diag_Bit(58)

Octet	Name	Bit	Bezeichnung	Beschreibung
		3	Wrong sensor type	GSD-Unit_Diag_Bit(59)
		4	SCS alarm (Sensor check system)	GSD-Unit_Diag_Bit(60)
		5	Sensor alarm	GSD-Unit_Diag_Bit(61)
		6	SCS warning (Sensor check system)	GSD-Unit_Diag_Bit(62)
		7	Sensor warning	GSD-Unit_Diag_Bit(63)
16	Physical Block DIAGNOSIS_EXTENSION[1] DIAGNOSIS[1]	0	Calibration active	GSD-Unit_Diag_Bit(64)
		1	Internal sensor failure	GSD-Unit_Diag_Bit(65)
		2	Module communication failure	GSD-Unit_Diag_Bit(66)
		3	Module failure	GSD-Unit_Diag_Bit(67)
		4	Module mismatch	GSD-Unit_Diag_Bit(68)
		5	Internal module failure	GSD-Unit_Diag_Bit(69)
		6	Simulation active	GSD-Unit_Diag_Bit(70)
		7	Hold active	GSD-Unit_Diag_Bit(71)
17	Physical Block DIAGNOSIS_EXTENSION[2]	0	Power bad	GSD-Unit_Diag_Bit(72)
		1	Not supported	GSD-Unit_Diag_Bit(73)
		2	Limit alarm	GSD-Unit_Diag_Bit(74)
		3	Limit warning	GSD-Unit_Diag_Bit(75)
		4	Param menu active	GSD-Unit_Diag_Bit(76)
		7	Process value limit alarm	GSD-Unit_Diag_Bit(87)
19	Physical Block DIAGNOSIS_EXTENSION[4]	0	Process value limit warning	GSD-Unit_Diag_Bit(88)
		1	Process value alarm	GSD-Unit_Diag_Bit(89)
		2	Process value warning	GSD-Unit_Diag_Bit(90)
		3..7	0 (not supp. by GSD)	GSD-Unit_Diag_Bit(91..95)
20	Physical Block DIAGNOSIS_EXTENSION[5]	0..7	0 (not supp. by GSD)	GSD-Unit_Diag_Bit(96..103)
21	Physical Block DEVICE_DIAGNOSIS [10..]	0..7	Entspricht PB:DEVICE_DIAGNOSIS[11:x] (s. Kap. 9.6)	GSD-Unit_Diag_Bit(104..)
..	...		..	..

Octet	Name	Bit	Bezeichnung	Beschreibung
68	Physical Block DEVICE_DIAGNOSIS [..57]	0..7	Entspricht PB:DEVICE_DIAGNOSIS[58:x] (s. Kap. 9.6)	GSD-Unit_Diag_Bit(..487)

5.4 Diagnose-Konfiguration

Die werkseitig eingestellte NAMUR NE107-Klassenzugehörigkeit eines jeden Diagnose-Ereignisses kann flexibel über den Feldbus festgelegt werden. Hierbei ist es erforderlich, die DIAG_EVENT_SWITCH-Strukturen des Physical Blocks, deren Aufbau im nachfolgenden Kapitel erläutert wird, neu zu beschreiben.

5.4.1.1 Aufbau der DIAG_EVENT_SWITCH-Struktur

Die DIAG_EVENT_SWITCH-Struktur des Physical Blocks besteht aus einer Aneinanderreihung von Parametern des Typs DIAG_STATUS_LINK, gefolgt von einer Verlinkung (Slot-Nummer, absoluter Index) zur nachfolgenden DIAG_EVENT_SWITCH-Struktur. Jedes DIAG_STATUS_LINK-Element legt die NE107-Klasse des einzelnen Diagnose-Ereignisses fest.

Eine Sonderfunktion hat der Wert 00_h, der bewirkt, dass das entsprechende Diagnose-Ereignis ausgeblendet wird.

Octet	Beschreibung
1..48	DIAG_STATUS_LINK-Elemente. Folgende Werte werden unterstützt: 00_h : Diagnostic event has no effect on the status 10_h : **M** – Maintenance required (NE107, s. Kap. 5.1) 30_h : **F** – Failure (NE107, s. Kap. 5.1) 40_h : **S** – Out of specification (NE107, s. Kap. 5.1) 50_h : **C** – Function check (NE107, s. Kap. 5.1)
49	Slot-Nummer der folgenden DIAG_EVENT_SWITCH-Struktur (0, falls n.v.)
50	Abs. Index der folgenden DIAG_EVENT_SWITCH-Struktur (0, falls n.v.)

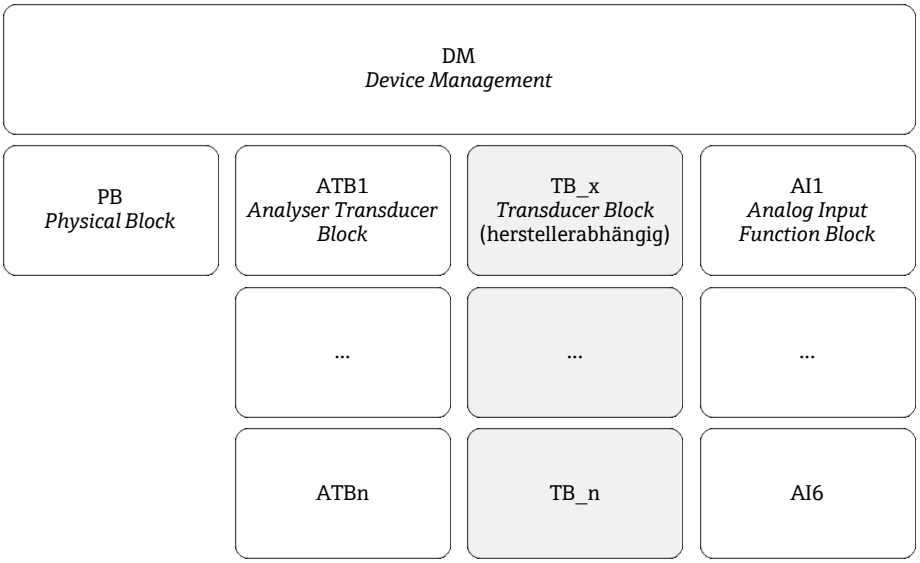
5.4.1.2 Adressierung der DIAG_EVENT_SWITCH-Strukturen

Bezeichner	Slot / Index
DIAG_EVENT_SWITCH	0 / 44
DIAG_EVENT_SWITCH_1	0 / 99

6 PA Profil Implementierung & Services

6.1 Block-Konfiguration

Das folgende Schaubild stellt die Blockkonfiguration des Gerätes schematisch dar. Bei den Blöcken des Typs DM, PB, ATBx und AIx handelt es sich um Standardblöcke des PA-Profils, die TB_x Blöcke sind herstellerspezifisch implementiert.



Die nachfolgende Tabelle enthält Informationen über die Anzahl der Blöcke in den entsprechenden Projektierungen und ein Verweis zum Kapitel 9, in dem Layout und Adressierung der Blöcke beschrieben werden.

	Projektierung		
Block-Typ	**pHORP**	**Cond**	**Oxygen**
DM Device Management	(1)	(1)	(1)
PB Physical Block	(1) s. Kap. 9.2	(1) s. Kap. 9.2	(1) s. Kap. 9.2
ATB Analyser Transducer Block	(11) s. Kap. 9.4	(6) s. Kap. 9.4	(9) s. Kap. 9.4
TB Transducer Block I (herstellerspezifisch)	(1) TB_COMMON_1 s. Kap. 9.5.2	(1) TB_COMMON_1 s. Kap. 9.5.2	(1) TB_COMMON_1 s. Kap. 9.5.2
TB Transducer Block II (herstellerspezifisch)	(1) TB_COMMON_2 s. Kap. 9.5.3	(1) TB_COMMON_2 s. Kap. 9.5.3	(1) TB_COMMON_2 s. Kap. 9.5.3
TB Transducer Block III (herstellerspezifisch)	(2) TB_PH_x s. Kap. 9.5.4 ff.	(1) TB_COND_1 s. Kap. 9.5.8 ff.	(1) TB_DO_1 s. Kap. 9.5.10
AI Analog Input Function Block	(6) s. Kap. 9.3	(6) s. Kap. 9.3	(6) s. Kap. 9.3
Block – Gesamtanzahl	23	17	20

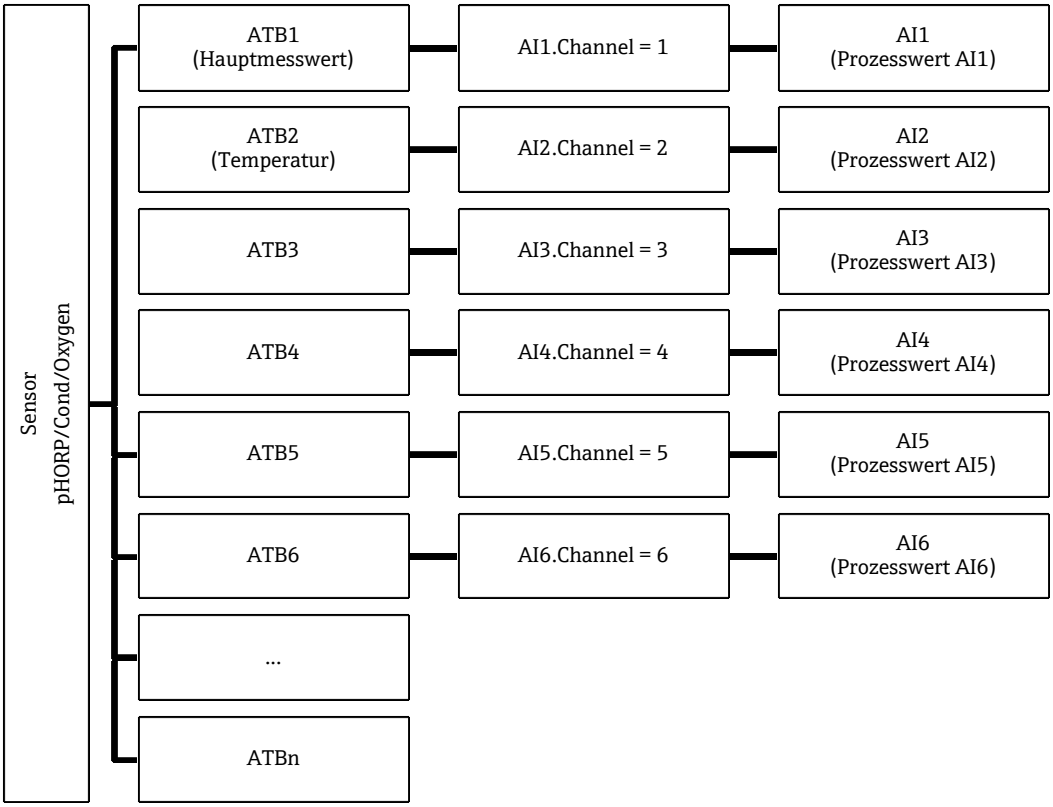
6.2 Auswahl der Prozesswerte im zyklischen Datenaustausch

In Abhängigkeit der gesendeten Modul-Konfiguration (s. Kap. 4.5.2) werden 1..n Prozesswerte ($1 \leq n \leq 6$) der Analog Input-Funktionsblöcke AI1..AIn im zyklischen Datenaustausch an das Leitsystem übertragen. Neben den jeweiligen Hauptmesswerten (AI1) in den Projektierungen pH, Leitfähigkeit und Sauerstoff und der Temperatur (AI2), liefert das Gerät weitere Prozesswerte (AI3..AI6), die Sie den nachfolgenden Tabellen entnehmen können.

Durch Änderung der Channel-Parameter in den AI-Blöcken kann die Werkseinstellung überschrieben und die Prozessdatenübermittlung neu organisiert werden.

Die Adressierung der Parameter entnehmen Sie bitte den Tabellen im Kapitel 9.3.2 (Analog Input Blocks), bzw. 9.4.4 (Analyzer Transducer Blocks).

Das folgende Schaubild zeigt die Werkskonfiguration:



6.2.1 Prozesswerte Liquiline pHORP

Analyzer Transducer Block (ATBx)	**Analyzer Transducer Block Prozesswert (ATBx.PV)**	**Analyzer Transducer Block Prozesswert-Einheit (ATBx.PV_UNIT)**	**AI Block ATB-Referenzkanal, Werksbelegung (AIx.Channel)**
1	Hauptmesswert Werkseinstellung: pH	pH (Werkseinstellung)	1 (AI1.Channel → ATB1)
2	Temperatur	°C	2 (AI2.Channel → ATB2)
3	Rohmesswert	mV	3 (AI3.Channel → ATB3)
4	Gedämpfter Rohwert	mV	4 (AI4.Channel → ATB4)
5	pH	pH	5 (AI5.Channel → ATB5)

Analyzer Transducer Block (ATBx)	Analyzer Transducer Block Prozesswert (ATBx.PV)	Analyzer Transducer Block Prozesswert-Einheit (ATBx.PV_UNIT)	AI Block ATB-Referenzkanal, Werksbelegung (AIx.Channel)
6	Redox mV	mV	6 (AI6.Channel → ATB6)
7	Redox %	%	-
8	rH	[rH]	-
9	Glasimpedanz	MΩ	-
10	Steigung	mV/pH	-
11	Nullpunkt	pH	-

6.2.2 Prozesswerte Liquiline Cond

Analyzer Transducer Block (ATBx)	Analyzer Transducer Block Prozesswert (ATBx.PV)	Analyzer Transducer Block Prozesswert-Einheit (ATBx.PV_UNIT)	AI Block ATB-Referenzkanal, Werksbelegung (AIx.Channel)
1	Hauptmesswert Werkseinstellung: Leitfähigkeit	mS/cm (Werkseinstellung)	1 (AI1.Channel → ATB1)
2	Temperatur	°C	2 (AI2.Channel → ATB2)
3	Unkompensierte Leitfähigkeit	mS/cm	3 (AI3.Channel → ATB3)
4	Leitfähigkeit	mS/cm	4 (AI4.Channel → ATB4)
5	Spez. Widerstand	MΩ*cm	5 (AI5.Channel → ATB5)
6	Konzentration	%	6 (AI6.Channel → ATB6)

6.2.3 Prozesswerte Liquiline Oxygen

Analyzer Transducer Block (ATBx)	Analyzer Transducer Block Prozesswert (ATBx.PV)	Analyzer Transducer Block Prozesswert-Einheit (ATBx.PV_UNIT)	AI Block ATB-Referenzkanal, Werksbelegung (AIx.Channel)
1	Hauptmesswert Werkseinstellung: Konzentration (Flüssigkeit)	mg/l (Werkseinstellung)	1 (AI1.Channel → ATB1)
2	Temperatur	°C	2 (AI2.Channel → ATB2)
3	Kompensationsstrom	nA	3 (AI3.Channel → ATB3)
4	Umgebungsdruck	hPa	4 (AI4.Channel → ATB4)
5	Partialdruck	hPa	5 (AI5.Channel → ATB5)
6	% Sättigung	%	6 (AI6.Channel → ATB6)
7	Konzentration (Flüssigkeit)	mg/l	-
8	Konzentration (Gas)	%Vol	-
9	Tau	µs	-

6.3 Prozesswert-Einheitenumschaltung

Im Auslieferungszustand werden die Prozesswerte des Liquiline M CM42 in der in den Analyzer Transducer Blöcken hinterlegten Einheit (ATBx.PV_UNIT) bereitgestellt (s. Kap. 9.4).

Beispiel Liquiline Cond: Hauptmesswert Leitfähigkeit in mS/cm.

Soll eine Änderung der Prozesswert-Einheit in beispielsweise µS/cm erwirkt werden, so geschieht dies durch Skalierung des Ausgangswertes. Hierzu muss der Parameter OUT_SCALE des AI Blocks (s. Kap. 9.3.2), der auf den entsprechenden Transducer Block verschaltet wurde, modifiziert werden.

Verfahren:

1. Lesen des Parameters AI.OUT_SCALEx vom Gerät
2. Ändern der Eingangs-Skalierung gemäß einer Formel oder durch Multiplikation des gelesenen Wertes mit einem Faktor
3. Ändern der Ausgangs-Skalierung unter Verwendung derselben Formel oder desselben Faktors wie in (2)
4. Optionales Ändern von Einheiten-Code und Stelle des Dezimalpunktes in AI.OUT_SCALEx
5. Schreiben des geänderten AI.OUT_SCALEx Parameters in das Gerät

Beispiele zur Einheitenumschaltung entnehmen Sie bitte den nachfolgenden Kapiteln.

6.3.1 Aufbau der AI Block Parameter Struktur OUT_SCALE

Octet	Inhalt
1	Skalierungs-Endwert 32 Bit Gleitkomazahl nach IEEE-754
2	
3	
4	
5	Skalierungs-Anfangswert 32 Bit Gleitkomazahl nach IEEE-754
6	
7	
8	
9	Einheit (s. Kap. 8.1)[4]
10	
11	Dezimalpunkt

[4] Die hier angegebene Einheit hat keinen Einfluss auf die Skalierung der ausgegebenen Messgröße.

6.3.2 Beispiele zur Einheitenumrechnung

Im Folgenden sind einige typische Beispiele zur Skalierung von Einheiten über AI.OUT_SCALEx gelistet.

6.3.2.1 Konzentration Flüssigkeit

Umrechnungsformel:

$$[mg/l] \xrightarrow{x\ 1000} [\mu g/l]$$

Beispiel für Skalierung Anfangswert/Endwert (-0,02/120) [mg/l]:

Octet	Inhalt	mg/l ↔ µg/l			
1	Endwert	42_h	120,0 [mg/l]	47_h	120000,0 [µg/l]
2		$F0_h$		EA_h	
3		00_h		60_h	
4		00_h		00_h	
5	Anfangswert	BC_h	-0,02 [mg/l]	$C1_h$	-20 [µg/l]
6		$A3_h$		$A0_h$	
7		$D7_h$		00_h	
8		$0A_h$		00_h	
9	Einheit	0616_h		0617_h	
10					
11	Dezimalpunkt	02_h			

6.3.2.2 Leitfähigkeit

Umrechnungsformel:

$$[S/cm] \xrightarrow{x\ 1000} [mS/cm] \xrightarrow{x\ 1000} [\mu S/cm]$$

Beispiel für Skalierung Anfangswert/Endwert (0/2000) [mS/cm]:

Octet	Inhalt	S/cm ↔ mS/cm ↔ µS/cm					
1	Endwert	40_h	2,0 [S/cm]	44_h	2000,0 [mS/cm]	49_h	2000000,0 [µS/cm]
2		00_h		FA_h		$F4_h$	
3		00_h		00_h		24_h	
4		00_h		00_h		00_h	

Octet	Inhalt	S/cm ↔ mS/cm ↔ µS/cm					
5	Anfangswert	00_h	0,0 [S/cm]	00_h	0,0 [mS/cm]	00_h	0,0 [µS/cm]
6		00_h		00_h		00_h	
7		00_h		00_h		00_h	
8		00_h		00_h		00_h	
9	Einheit	$060F_h$		0516_h		0610_h	
10							
11	Dezimalpunkt	02_h					

6.3.2.3 Temperatur

Umrechnungsformel:

$$T_{[°F]} = T_{[°C]} \cdot 1.8 + 32$$

Beispiel für Skalierung Anfangswert/Endwert (-5/50) [°C]:

Octet	Inhalt	Celsius ↔ Fahrenheit			
1	Endwert	42_h	50 [°C]	42_h	122 [°F]
2		48_h		$F4_h$	
3		00_h		00_h	
4		00_h		00_h	
5	Anfangswert	$C0_h$	-5 [°C]	41_h	23 [°F]
6		$A0_h$		$B8_h$	
7		00_h		00_h	
8		00_h		00_h	
9	Einheit	$03E9_h$		$03EA_h$	
10					
11	Dezimalpunkt	02_h			

6.4 Umschaltung Condensed Status/Classic Status

Bei Verwendung der herstellerspezifischen GSD-Datei wird grundsätzlich der Condensed Status ausgegeben. Wird das Gerät hingegen im Liquiline M CM42 Ver. 1.xx-Kompatibilitätsmodus betrieben oder die Analyzer Profile GSD Datei verwendet, so kann die Statusausgabe über den Physical Block Parameter COND_STATUS_DIAG vorgenommen werden:

Status-Typ	Wert für COND_STATUS_DIAG	Bedingung
Classic	00_h	Verwendung einer der folgenden GSD-Dateien ▪ EH3x1565.GSD ▪ EH3x1566.GSD ▪ EH3x1567.GSD ▪ PA139750.GSD
Condensed	01_h	

Hinweis

Zur Umstellung des Status-Typs über COND_STATUS_DIAG darf sich das Gerät nicht im zyklischen Datenaustausch befinden.

6.4.1 Reset-Funktionen

Das Gerät bietet die in der folgenden Tabelle gelisteten Reset-Modi, die durch Beschreiben des Physical Block Parameters FACTORY_RESET ausgelöst werden können.

Modus	Wert für FACTORY_RESET	Beschreibung
Factory-Reset	1	Das Gerät wird auf Werkseinstellung zurückgesetzt
Restart	2506	Geräte-Neustart unter Beibehaltung der kundenspezifischen Einstellungen.
Reset Bus-Address	2712	Die Bus-Adresse wird auf den Initialwert von 126 zurück gestellt. Das No_Add_Chg_Flag des Service Set_Slave_Add, welches ein Umstellen der Bus-Adresse verhindert, wird zurückgesetzt. Die sonstigen Einstellungen des Geräts bleiben unverändert.

"Non FR Parameters"

Die nachfolgende Tabelle enthält Parameter, die von einem Zurücksetzen auf Werkseinstellungen (FACTORY_RESET = 1) ausgenommen sind.

Parameter	Typ	Beschreibung
Bus-Adresse	Geräteparameter	Die PROFIBUS-Adresse des Gerätes
No_Add_Chg	PROFIBUS-Stackparameter	Diese Option kann vom Master über den Service Set_Slave_Add aktiviert werden und verriegelt ein weiteres Ändern der Bus-Adresse. (Address Lock-Zustand).
Physical Block Parameter IDENT_NUMBER_SELECTOR	PA-Profil-Parameter	Konfiguration der Geräte-Identnummer (s. Kap. 4.3.2)

7 Plant Asset Management (PAM)

Zur Integration des Geräts in die Prozessautomatisierung steht der folgende Gerätetreiber zur Verfügung:

PAM Tool	Technologie	Funktionalität
Fieldcare®	FDT/DTM	Konfiguration der PA-Profil Funktionsblöcke Anzeige der verfügbaren Messwerte Anzeige von Diagnose- und Servicebezogener Funktionalität Upload/Download der im DTM enthaltenen Parameter
SIMATIC PDM	PDM DD	Konfiguration der PA-Profil Funktionsblöcke Anzeige der verfügbaren Messwerte Anzeige von Diagnose- und Servicebezogener Funktionalität Upload/Download der enthaltenen Parameter

7.1 Bezugsquelle des DTM

Das DTM kann über den folgenden Link von unserer Homepage bezogen werden.

www.endress.com

7.2 Bezugsquelle des Siemens SIMATIC PDM® DD

Die Siemens SIMATIC PDM® DD kann über den folgenden Link von unserer Homepage bezogen werden.

www.endress.com

® SIMATEC PDM is a registered trademark of Siemens AG

8 Anhang

8.1 Einheiten

Die Prozesswerte werden im Auslieferungszustand mit der in den ATBx.PV_UNIT Parametern der Transducerblöcke hinterlegten Einheit übertragen (s. Kap 6.2). Eine Anpassung der Einheit an die Prozessgegebenheiten ist nur indirekt durch entsprechende Skalierung des Messwertes möglich. Lesen Sie hierzu bitte das Kapitel 6.3.

Die folgende Liste enthält die Einheiten-Codes zur Kennzeichnung des Prozesswertes anhand der eingestellten Skalierung. Die Eintragung muss vom Benutzer im Parameter AI.OUT_SCALE vorgenommen werden.

Code	Description	Unit
1000 ($3E8_h$)	Kelvin	K
1001 ($3E9_h$)	Degree Celsius	°C
1002 ($3EA_h$)	Degree Fahrenheit	°F
1010 ($3F2_h$)	Meter	m
1011 ($3F3_h$)	Kilometer	km
1012 ($3F4_h$)	Centimeter	cm
1013 ($3F5_h$)	Millimeter	mm
1019 ($3FB_h$)	Inch	
1021 ($3FD_h$)	Mile	
1054 ($41E_h$)	Second	s
1056 (420_h)	Millisecond	ms
1057 (421_h)	Microsecond	µs
1058 (422_h)	Minute	min
1059 (423_h)	Hour	h
1130 ($46A_h$)	Pascal	Pa
1136 (470_h)	Hectopascal	hPa
1209 ($4B9_h$)	Ampere	A
1211 ($4BB_h$)	Milliampere	mA
1212 ($4BC_h$)	Microampere	µA
1213 ($4BD_h$)	Nanoampere	nA
1214 ($4BE_h$)	Picoampere	pA
1240 ($4D8_h$)	Volt	V
1243 ($4DB_h$)	Millivolt	mV

Code	Description	Unit
1244 ($4DC_h$)	Microvolt	µV
1281 (501_h)	Ohm	Ω
1282 (502_h)	Gigaohm	GΩ
1283 (503_h)	Megaohm	MΩ
1285 (505_h)	Kilo-ohm	kΩ
1287 (507_h)	Siemens	S
1289 (509_h)	Millisiemens	mS
1290 ($50A_h$)	Microsiemens	µS
1291 ($50B_h$)	Ohm-meter	Ωm
1293 ($50D_h$)	Megaohm-meter	MΩm
1294 ($50E_h$)	Kilo-ohmmeter	kΩm
1295 ($50F_h$)	Ohmcentimeter	Ωcm
1299 (513_h)	Siemens per meter	S/m
1302 (516_h)	Millisiemens per centimeter	mS/cm
1342 ($53E_h$)	Percent	%
1422 ($58E_h$)	pH	pH
1423 ($58F_h$)	parts per million	ppm
1424 (590_h)	parts per billion	ppb
1551 ($60F_h$)	Siemens per centimeter	S/cm
1552 (610_h)	Microsiemens per centimeter	µS/cm
1553 (611_h)	Millisiemens per meter	mS/m
1554 (612_h)	Microsiemens per meter	µS/m
1555 (613_h)	Megaohm centimeter	MΩ*cm
1556 (614_h)	Kilo-ohms centimeter	kΩcm
1558 (616_h)	Milligrams per litre	mg/l
1559 (617_h)	Micrograms per litre	µg/l
1562 ($61A_h$)	Percent volume	%Vol
1997 ($7CD_h$)	<None/Empty text>	
1998 ($7CE_h$)	Autorange	
34010 ($84DA_h$)	Amperes per pascal	A/Pa
34014 ($84DE_h$)	rH	[rH]
34019 ($84E3_h$)	Millivolts per pH	mV/pH

Code	Description	Unit
34020 ($84E4_h$)	Picoampere per hectopascal	pA/hPa
34021 ($84E5_h$)	ppm volume	ppm Vol.

9 PA-Profil Tabellen

9.1 Legende

Column title	Description	
Rel. Index	Index offset of the parameter relative to the first parameter of the block.	
Object Type Object type for the parameter value	Simple Record Array	Simple variable Structure of different simple variables Array of simple variables
Parameter usage	C I O	Contained Input Output
Kind of Transport	a cyc	acyclic cyclic
Access	R W	Indicates that the parameter can be read Indicates that the parameter can be written
Mandatory/Optional	M O	The parameter is mandatory for acyclic access. Cyclic access may be configured separately The parameter is optional
Data Type Data type for the parameter value	Name DS-n	Basic data type of Simple variable or array Data structure (Record) number n
Store Class of memory required	N S D Cst	**Non-volatile parameter** which will be remembered through a power cycle **Static** – Non-volatile and changing the parameter increases the static revision counter ST_REV **Dynamic** – the value is calculated by the block or read from another block **Constant** – The parameter does not change in a device

9.2 Physical Block

9.2.1 Adressierung (Liquiline pHORP/Cond/Oxygen)

Adressierung Physical Block	
Slot	**Index**
0	16

9.2.2 Layout (Liquiline pHORP/Cond/Oxygen)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
16	0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	This object contains the characteristics of the blocks.
17	1	ST_REV	Simple	UNSIGNED16	D	2	R	C/a	0	
18	2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a	EH_CM42_<ORDERCODE>	
19	3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
20	4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	The alert parameter (0 - 255) has a user-assigned value which may be used in sorting alarms or events generated by a block.
21	5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS) 4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)
22	6	MODE_BLK	Record	DS37	D	3	R	C/a	088808	
23	7	ALARM_SUM	Record	DS42	D	8	R	C/a		This parameter contains the current states of the block alarms.

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
24	8	SOFTWARE_REVISION	Simple	VISIBLE_STRING_16	Cst	16	R	C/a	<Firmware Version String> e.g. 02.04.00.xx	
25	9	HARDWARE_REVISION	Simple	VISIBLE_STRING_16	Cst	16	R	C/a	<Hardware Version String> e.g. 00.05.xx	
26	10	DEVICE_MAN_ID	Simple	UNSIGNED16	Cst	2	R	C/a	0x0011	
27	11	DEVICE_ID	Simple	VISIBLE_STRING_16	Cst	16	R	C/a	Liquiline pHORP/ Liquiline Cond/ Liquiline Oxygen	
28	12	DEVICE_SER_NUM	Simple	VISIBLE_STRING_16	Cst	16	R	C/a	----	
29	13	DIAGNOSIS	Simple	OCTET_STRING_4	D	4	R	C/a	0x0	
30	14	DIAGNOSIS_EXTENSION	Simple	OCTET_STRING_6	D	6	R	C/a	0x0	
31	15	DIAGNOSIS_MASK	Simple	OCTET_STRING_4	Cst	4	R	C/a	0x800FFFFF	
32	16	DIAGNOSIS_MASK_EXTENSION	Simple	OCTET_STRING_6	Cst	6	R	C/a	0x 0007FFFFFFFF	
33	17	DEVICE_CERTIFICATION	Simple	VISIBLE_STRING_32	Cst	32	R	C/a		
34	18	WRITE_LOCKING	Simple	UNSIGNED16	N	2	R/W	C/a	2457	Values: 0: on 2457: off
35	19	FACTORY_RESET	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 1: Factory reset 2712: Reset address to '126' 2506: Warm start 0: No function
36	20	DESCRIPTOR	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
37	21	DEVICE_MESSAGE	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
38	22	DEVICE_INSTAL_DATE	Simple	VISIBLE_STRING_16	S	16	R/W	C/a		
39	23	LOCAL_OP_ENA	Simple	UNSIGNED8	N	1	R/W	C/a	1	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Values: 0: Disabled 1: Enabled
40	24	IDENT_NUMBER_SELECTOR	Simple	UNSIGNED8	S	1	R/W	C/a	0x7F	Values: 127: Automatic mode 0: 0x9750 (6 AI) 128: E_IDSEL_CM42 129: E_IDSEL_CM42_OLD
41	25	HW_WRITE_PROTECTION	Simple	UNSIGNED8	D	1	R	C/a	0	Values: 0: None
42	26	FEATURE	Record	DS68	N	8	R	C/a		
43	27	COND_STATUS_DIAG	Simple	UNSIGNED8	S	1	R/W	C/a	1	
44	28	DIAG_EVENT_SWITCH	Record	Diag_Event_Switch	S	50	R/W	C/a	0	
52	36	DEVICE_CONFIGURATION	Simple	VISIBLE_STRING_32	D	32	R	C/a	0	
53	37	INIT_STATE	Simple	UNSIGNED8	S	1	R/W	C/a	2	Values: 2: RUNNING 5: MAINTENANCE
54	38	DEVICE_STATE	Simple	UNSIGNED8	D	1	R/W	C/a	2	Values: 2: RUNNING 5: MAINTENANCE
55	39	GLOBAL_STATUS	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 1: Failure (F) 2: Maintenance request (M) 4: Function check (C) 8: Out of specification (S) 0: Ok
64	48	CURRENT_ERROR	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
65	49	LAST_ERROR	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
69	53	DEVICE_BUS_ADDRESS	Simple	UNSIGNED8	N	1	R	C/a	126	Min: 0 Max: 126
74	58	PROFILE_REVISION	Simple	OCTET_STRING_58	N	58	R	C/a	3.02	
75	59	CLEAR_LAST_ERROR	Simple	UNSIGNED8	N	1	R/W	C/a	0	Values: 0: off 1: on
76	60	IDENT_NUMBER	Simple	UNSIGNED16	N	2	R	C/a	5477 / 5478 / 5479	
77	61	CHECK_CONFIGURATION	Simple	UNSIGNED8	D	1	R	C/a	0	
79	63	ORDER_CODE	Simple	VISIBLE_STRING_32	N	32	R	C/a	----	
80	64	TAG_LOCATION	Simple	VISIBLE_STRING_16	S	16	R/W	C/a		

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
81	65	SIGNATURE	Simple	OCTET_STRING_54	S	54	R/W	C/a		
82	66	ENP_VERSION	Simple	VISIBLE_STRING_16	N	16	R	C/a	2.02.00	
83	67	DEVICE_DIAGNOSIS	Simple	OCTET_STRING_58	N	58	R	C/a		
85	69	SERVICE_LOCKING	Simple	UNSIGNED16	S	2	R/W	C/a	0	
86	70	UDL_FEATURE	Simple	UNSIGNED16	N	2	R	C/a	3	
87	71	PTA_OP_CODE	Simple	UNSIGNED16	N	2	R/W	C/a	0	
88	72	PTA_STATUS	Simple	UNSIGNED16	D	2	R	C/a	1	
89	73	UDL_VERI_DELAY	Simple	UNSIGNED16	N	2	R	C/a	10	
90	74	UDL_REVISION	Simple	UNSIGNED16	N	2	R	C/a	0	
91	75	BUS_ADDRESS_SW_HW	Simple	UNSIGNED8	D	1	R	C/a	1	
92	76	BUS_ADDRESS_LOCKED	Simple	UNSIGNED8	D	1	R	C/a	0	
93	77	REV_COUNTER	Simple	UNSIGNED16	D	2	R	C/a	0	
99	83	DIAG_EVENT_SWITCH_1	Record	Diag_Event_Switch	S	50	R/W	C/a	0	
100	84	IDENT_NUMBER_SELECTOR_COPY	Simple	UNSIGNED8	N	1	R	C/a	255	
101	85	BUS_ADDRESS_LOCKED_COPY	Simple	UNSIGNED8	N	1	R	C/a	255	

9.3 Analog Input Blocks

9.3.1 Adressierung (Liquiline pHORP/Cond/Oxygen)

Adressierung Analog Input Blocks		
AIx	**Slot**	**Index**
1	1	16
2	2	16
3	3	16
4	4	16
5	5	16
6	6	16

9.3.2 Layout (Liquiline pHORP/Cond/Oxygen)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
16	0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	
17	1	ST_REV	Simple	UNSIGNED16	N	2	R	C/a	0	
18	2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
19	3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
20	4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	
21	5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS) 4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
22	6	MODE_BLK	Record	DS37	D	3	R	C/a	089808	
23	7	ALARM_SUM	Record	DS42	D	8	R	C/a		
24	8	BATCH	Record	DS67	S	10	R/W	C/a	0	
26	10	OUT	Record	DS101	D	5	R	O/cyc	0	
27	11	PV_SCALE	Array	FLOAT	S	8	R/W	C/a	0;0	
28	12	OUT_SCALE	Record	DS36	S	11	R/W	C/a	0;0;None;0	
29	13	LIN_TYPE	Simple	UNSIGNED8	S	1	R/W	C/a	0	Values: 0: Linear
30	14	CHANNEL	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values (pHORP): 0: None 1: Main value 2: Temperature 3: Raw value 4: Damped raw value 5: pH 6: ORP mV 7: ORP % 8: Combined pH/ORP 9: Glass impedance 10: Slope 11: Zero point Values (Cond): 0: None 1: Main value 2: Temperature 3: Uncompensated conductivity 4: Conductivity 5: Resistivity 6: Concentration Values (Oxygen): 0: None 1: Main value 2: Temperature 3: Measuring current 4: Ambient pressure value

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										5: Partial pressure 6: % saturation 7: Concentration 8: Conc. (gaseous) 9: Raw value Âµs
32	16	PV_FTIME	Simple	FLOAT	S	4	R/W	C/a	0	
33	17	FSAFE_TYPE	Simple	UNSIGNED8	S	1	R/W	C/a	1	Values: 0: Default value is used as output value 1: Storing last usable output value 2: The calculated output value is incorrect
34	18	FSAFE_VALUE	Simple	FLOAT	S	4	R/W	C/a	0.0	
35	19	ALARM_HYS	Simple	FLOAT	S	4	R/W	C/a	0.0	
37	21	HI_HI_LIM	Simple	FLOAT	S	4	R/W	C/a	1e+20	
39	23	HI_LIM	Simple	FLOAT	S	4	R/W	C/a	1e+19	
41	25	LO_LIM	Simple	FLOAT	S	4	R/W	C/a	-1e+19	
43	27	LO_LO_LIM	Simple	FLOAT	S	4	R/W	C/a	-1e+20	
50	34	SIMULATE	Record	DS50	S	6	R/W	C/a	4F0000000000	

9.4 Analyser Transducer Blocks

9.4.1 Adressierung (Liquiline pHORP)

Adressierung Analyser Transducer Blocks (pHORP)				
ATBx	**ATBx.PV**	**ATBx.PV_UNIT**	**Slot**	**Index**
1	Hauptmesswert Werkseinstellung: pH	pH (Werkseinstellung)	1	70
2	Temperatur	°C	1	100
3	Rohmesswert	mV	1	130
4	Gedämpfter Rohwert	mV	1	160
5	pH	pH	1	190
6	Redox mV	mV	2	70
7	Redox %	%	2	100
8	rH	[rH]	2	130
9	Glasimpedanz	MΩ	2	160
10	Steigung	mV/pH	2	190
11	Nullpunkt	pH	7	70

9.4.2 Adressierung (Liquiline Cond)

Adressierung Analyser Transducer Blocks (Cond)				
ATBx	**ATBx.PV**	**ATBx.PV_UNIT**	**Slot**	**Index**
1	Hauptmesswert Werkseinstellung: Leitfähigkeit	mS/cm (Werkseinstellung)	1	70
2	Temperatur	°C	1	100
3	Unkompensierte Leitfähigkeit	mS/cm	1	130
4	Leitfähigkeit	mS/cm	1	160
5	Spez. Widerstand	MΩ*cm	1	190
6	Konzentration	%	2	70

9.4.3 Adressierung (Liquiline Oxygen)

Adressierung Analyser Transducer Blocks (Oxygen)				
ATBx	**ATBx.PV**	**ATBx.PV_UNIT**	**Slot**	**Index**
1	Hauptmesswert Werkseinstellung: Konzentration (Flüssigkeit)	mg/l (Werkseinstellung)	1	70
2	Temperatur	°C	1	100
3	Mediumsdruckkompensation	nA	1	130
4	Umgebungsdruck	hPa	1	160
5	Partialdruck	hPa	1	190
6	% Sättigung	%	2	70
7	Konzentration (Flüssigkeit)	mg/l	2	100
8	Konzentration (Gas)	%Vol	2	130
9	Tau	µs	2	160

9.4.4 Layout (Liquiline pHORP/Cond/Oxygen)

Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	
1	ST_REV	Simple	UNSIGNED16	N	2	R	C/a	0	
2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	
5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS)

Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
									4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)
6	MODE_BLK	Record	DS37	D	3	R	C/a	080808	
7	ALARM_SUM	Record	DS42	D	8	R	C/a		
8	COMPONENT_NAME	Simple	OCTET_STRING_32	S	32	R/W	C/a		
9	PV	Record	DS60	D	12	R	C/a	None	
10	PV_UNIT	Simple	UNSIGNED16	S	2	R/W	C/a	None	
11	PV_UNIT_TEXT	Simple	OCTET_STRING_8	S	8	R/W	C/a		
12	ACTIVE_RANGE	Simple	UNSIGNED8	S	1	R/W	C/a	1	
13	AUTORANGE_ON	Simple	BOOLEAN	S	1	R/W	C/a	0	
14	SAMPLING_RATE	Simple	TIME_DIFFERENCE	S	4	R/W	C/a	333	
25	NUMBER_OF_RANGES	Simple	UNSIGNED8	N	1	R	C/a	1	
26	RANGE_1	Record	DS61	N	8	R/W	C/a	None	

9.5 Transducer Blocks (herstellerspezifisch)

9.5.1 Adressierung TB_COMMON_x (Liquiline pHORP/Cond/Oxygen)

Adressierung herstellerspezifische Transducer Blocks (pHORP/Cond/Oxygen)		
Block Bezeichner	**Slot**	**Index**
TB_COMMON_1	3	70
TB_COMMON_2	4	70

9.5.2 Layout TB_COMMON_1 (Liquiline pHORP/Cond/Oxygen)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
70	0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	
71	1	ST_REV	Simple	UNSIGNED16	D	2	R	C/a	0	
72	2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
73	3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
74	4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	
75	5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS) 4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)
76	6	MODE_BLK	Record	DS37	D	3	R	C/a	080808	
77	7	ALARM_SUM	Record	DS42	D	8	R	C/a		
78	8	ACTIVE_PACKAGE	Simple	UNSIGNED16	N	2	R	C/a	0	Values:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0: Basic 1: Advanced
79	9	FRAMEWORK_INIT_STATE	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0..29: Initialization 30: Ok
80	10	SENSOR_ANALOG_DIGITAL	Simple	UNSIGNED16	N	2	R	C/a	0	Values: 0: Analog 1: Digital
81	11	DAMPING	Simple	FLOAT	S	4	R/W	C/a	0.0 s	Min: 0.0 s Max: 600.0 s
82	12	CAL_STABLE_DELTA_TEMP	Simple	FLOAT	S	4	R/W	C/a	0.5 K	Min: 0.1 K Max: 2.5 K
83	13	DIAG_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
84	14	CALTIMER_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
85	15	CALTIMER_HOURS	Simple	FLOAT	S	4	R/W	C/a	1000.0 h	Min: 1.0 h Max: 50000.0 h
86	16	CALTIMER_ELAPSED	Simple	FLOAT	D	4	R	C/a	0.0 h	
87	17	PCS_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
88	18	PCS_TIME	Simple	FLOAT	S	4	R/W	C/a	60.0 min	Min: 1.0 min Max: 240.0 min
89	19	OPERATING_TIME_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0: off 1: on
90	20	OPERATING_TIME_WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COMMON_1.OPERATING_TIME_ALARM - 1.0 h
91	21	OPERATING_TIME_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COMMON_1.OPERATING_TIME_WARNING + 1.0 h Max: 50000.0 h
92	22	OPERATING_TIME_80C_WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COMMON_1.OPERATING_TIME_80C_ALARM - 1.0 h
93	23	OPERATING_TIME_80C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COMMON_1.OPERATING_TIME_80C_WARNING + 1.0 h Max: 50000.0 h
94	24	OPERATING_TIME_100C_WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COMMON_1.OPERATING_TIME_100C_ALARM - 1.0 h
95	25	OPERATING_TIME_100C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COMMON_1.OPERATING_TIME_100C_WARNING + 1.0 h Max: 50000.0 h
96	26	CALTIMER_EXPIRED_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
97	27	CALTIMER_EXPIRED_WARNING	Simple	FLOAT	S	4	R/W	C/a	23.0 M	Min: 0.233333333333 M Max: TB_COMMON_1.CALTIMER_EXPIRED_

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										ALARM - 0.233333333333 M
98	28	CALTIMER_EXPIRED_ALARM	Simple	FLOAT	S	4	R/W	C/a	24.0 M	Min: TB_COMMON_1.CALTIMER_EXPIRED_ WARNING + 0.233333333333 M Max: 24.0 M
99	29	STERILISATION_COUNTER_ FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
100	30	STERILISATION_COUNTER_ WARNING	Simple	FLOAT	S	4	R/W	C/a	30.0	Min: 1.0 Max: TB_COMMON_1.STERILISATION_ COUNTER_ALARM - 1.0
101	31	STERILISATION_COUNTER_ ALARM	Simple	FLOAT	S	4	R/W	C/a	50.0	Min: TB_COMMON_1.STERILISATION_ COUNTER_WARNING + 1.0 Max: 99.0
102	32	DATETIME	Simple	DATETIME	D	7	R/W	C/a	systemDateTimeI nSecsSinceRef	
103	33	DATE_FORMAT	Simple	UNSIGNED16	S	2	R/W	C/a	13	Values: 13: DDMMYYYY 14: MMDDYYYY
104	34	TIME_FORMAT	Simple	UNSIGNED16	S	2	R/W	C/a	17	Values: 17: hhmmss (24h) 34: hhmmss (am/pm)
105	35	DEVICE_SENSOR_GROUP	Simple	FLOAT	S	4	R/W	C/a	1.0	Min: 0.0 Max: 65535.0
106	36	SENSOR_CHECK	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: TAG group 2: TAG
107	37	HOLD_ON_CALIB	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										1: No hold 2: Hold 3: freeze 4: set value (I1+I2)
108	38	HOLD_ON_SETUP	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 1: No hold 2: Hold 3: freeze 4: set value (I1+I2)
109	39	HOLD_ON_DIAG	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 1: No hold 2: Hold 3: freeze 4: set value (I1+I2)
110	40	HOLD_HANGOVER_TIME	Simple	FLOAT	S	4	R/W	C/a	15.0 s	Min: 0.0 s Max: 300.0 s
111	41	CASE_CONTROL	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
112	42	LOGBOOKS_ACTIVE	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
113	43	DATALOGBOOK_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
114	44	DATALOGBOOK_TIME	Simple	FLOAT	S	4	R/W	C/a	60.0 s	Min: 5.0 s Max: 356400.0 s
115	45	DATALOGBOOK_PARAM	Simple	UNSIGNED16	S	2	R/W	C/a	2	Values: 0: Raw value 1: Temperature

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										2: Main value
116	46	LANGUAGE	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: English 1: Second language
117	47	FORMAT_TEMP_VALUE	Simple	UNSIGNED16	S	2	R/W	C/a	0x111	Values: 0x110: xxx 0x111: xxx.x
118	48	SENSOR_ORDERCODE	Simple	VISIBLE_STRING_32	N	32	R	C/a		
119	49	SENSOR_SERIALNUMBER	Simple	VISIBLE_STRING_16	N	16	R	C/a		
120	50	SENSOR_TAG	Simple	VISIBLE_STRING_32	N	32	R	C/a		
121	51	SENSOR_GROUP	Simple	UNSIGNED16	N	2	R	C/a	0	
122	52	SENSOR_HW_VERSION	Simple	VISIBLE_STRING_16	N	16	R	C/a		
123	53	SENSOR_SW_VERSION	Simple	VISIBLE_STRING_16	N	16	R	C/a		
124	54	SENSOR_INITIAL_OPERATION	Simple	DATETIME	N	7	R	C/a	0	
125	55	SENSOR_MANUFACTURING_DATE	Simple	DATETIME	N	7	R	C/a	0	
126	56	SENSOR_SPEC_MEASVALUE_MIN0	Simple	FLOAT	N	4	R	C/a	0.0 pH	
127	57	SENSOR_SPEC_MEASVALUE_MAX0	Simple	FLOAT	N	4	R	C/a	0.0 pH	
128	58	SENSOR_SPEC_MEASVALUE_MIN1	Simple	FLOAT	N	4	R	C/a	0.0 mV	
129	59	SENSOR_SPEC_MEASVALUE_MAX1	Simple	FLOAT	N	4	R	C/a	0.0 mV	
130	60	SENSOR_SPEC_CELL_CONSTANT	Simple	FLOAT	N	4	R	C/a	0.0 1/cm	
131	61	SENSOR_SPEC_PRESSURE	Simple	FLOAT	N	4	R	C/a	0.0 Pa	
132	62	SENSOR_SPEC_TEMP_MIN	Simple	FLOAT	N	4	R	C/a	0.0 DegC	
133	63	SENSOR_SPEC_TEMP_MAX	Simple	FLOAT	N	4	R	C/a	0.0 DegC	
134	64	SENSOR_SPEC_EXTREME_MIN	Simple	FLOAT	N	4	R	C/a	0.0 S/cm	
135	65	SENSOR_SPEC_EXTREME_MAX	Simple	FLOAT	N	4	R	C/a	0.0 S/cm	
136	66	SENSOR_CAL_VALID	Simple	UNSIGNED8	N	1	R	C/a	False	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
137	67	SENSOR_CAL_TEMP_VALID	Simple	UNSIGNED8	N	1	R	C/a	False	
138	68	SENSOR_CAL_DATE	Simple	DATETIME	N	7	R	C/a	0	
139	69	SENSOR_CAL_MODE	Simple	UNSIGNED16	N	2	R	C/a	0	Values: 0: None 1: Numeric input 2: 1 point 3: 2 point 4: Multipoint 5: table 6: Grab sample 7: Zero point 8: Air 100% rh 9: H2O air-saturated 10: Air variable 11: Zero point sample 12: Slope sample 13: Offset 14: Slope 15: with temp. comp. 16: without temp. comp. 17: Standard 18: Numeric input 19: Numeric input zero point 20: Numeric input 2-point 21: Factory 22: Test gas calibration 23: Value acquisition 24: 3 point cal.
140	70	SENSOR_CAL_COUNT	Simple	UNSIGNED16	N	2	R	C/a	0	
141	71	SENSOR_CAL_OFFSET	Simple	FLOAT	N	4	R	C/a	0.0 mV	
142	72	SENSOR_CAL_OPERATINGPOINT	Simple	FLOAT	N	4	R	C/a	0.0 mV	
143	73	SENSOR_CAL_ZEROPOINT	Simple	FLOAT	N	4	R	C/a	0.0 pH	
144	74	SENSOR_CAL_SLOPE	Simple	FLOAT	N	4	R	C/a	0.0 mV/pH	
145	75	SENSOR_CAL_ ISOTHERMINTERSECTION	Simple	FLOAT	N	4	R	C/a	0.0 pH	
146	76	SENSOR_CAL_BUFFER1	Simple	FLOAT	N	4	R	C/a	0.0 pH	
147	77	SENSOR_CAL_MEASURE1	Simple	FLOAT	N	4	R	C/a	0.0 mV	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
148	78	SENSOR_CAL_BUFFER2	Simple	FLOAT	N	4	R	C/a	0.0 pH	
149	79	SENSOR_CAL_MEASURE2	Simple	FLOAT	N	4	R	C/a	0.0 mV	
150	80	SENSOR_CAL_DELTA_ OPERATINGPOINT	Simple	FLOAT	N	4	R	C/a	0.0 mV	
151	81	SENSOR_CAL_DELTA_ZEROPOINT	Simple	FLOAT	N	4	R	C/a	0.0 pH	
152	82	SENSOR_CAL_DELTA_OFFSET	Simple	FLOAT	N	4	R	C/a	0.0 mV	
153	83	SENSOR_CAL_DELTA_SLOPE	Simple	FLOAT	N	4	R	C/a	0.0 mV/pH	
154	84	SENSOR_CAL_SERIAL	Simple	VISIBLE_STRING_ 32	N	32	R	C/a		
155	85	SENSOR_CAL_DATASET	Simple	UNSIGNED16	N	2	R/W	C/a	0	Values: 0: Current adj. 11: Current cal. 1: Recent 1 2: Recent 2 3: Recent 3 4: Recent 4 5: Recent 5 6: Recent 6 7: Recent 7 8: Recent 8 9: Factory 10: Reference
156	86	SENSOR_CAL_NUMDATASETS	Simple	UNSIGNED8	N	1	R	C/a	0	
157	87	SENSOR_CAL_DATASETTYPE	Simple	UNSIGNED16	N	2	R/W	C/a	0	Values: 0: pH 1: ORP
158	88	SENSOR_CAL_CELL_CONSTANT	Simple	FLOAT	N	4	R	C/a	0.0 1/cm	
159	89	SENSOR_CAL_DELTA_CELL_ CONSTANT	Simple	FLOAT	N	4	R	C/a	0.0 1/cm	
160	90	SENSOR_CAL_REF_VALUE1	Simple	FLOAT	N	4	R	C/a	0.0 S/cm	
161	91	SENSOR_CAL_REF_VALUE2	Simple	FLOAT	N	4	R	C/a	0.0 DegC	
162	92	SENSOR_CAL_TRANSMITTER_ID	Simple	UNSIGNED16	N	2	R	C/a	0	
163	93	SENSOR_CALTEMP_METHOD	Simple	UNSIGNED16	N	2	R	C/a	0	Values:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0: None 1: Numeric input 2: 1 point 3: 2 point 4: Multipoint 5: table 6: Grab sample 7: Zero point 8: Air 100% rh 9: H2O air-saturated 10: Air variable 11: Zero point sample 12: Slope sample 13: 14: 15: with temp. comp. 16: without temp. comp. 17: 18: Numeric input 19: Numeric input zero point 20: Numeric input 2-point 21: Factory
164	94	SENSOR_CALTEMP_DATE	Simple	DATETIME	N	7	R	C/a	0	
165	95	SENSOR_CALTEMP_OFFSET	Simple	FLOAT	N	4	R	C/a	273.15 K	
166	96	SENSOR_CALTEMP_SLOPE	Simple	FLOAT	N	4	R	C/a	0.0	
167	97	SENSOR_CALTEMP_REF_VALUE1	Simple	FLOAT	N	4	R	C/a	0.0 DegC	
168	98	SENSOR_CALTEMP_REF_VALUE2	Simple	FLOAT	N	4	R	C/a	0.0 DegC	
169	99	SENSOR_CALTEMP_SERIAL	Simple	VISIBLE_STRING_32	N	32	R	C/a		
170	100	SENSOR_CALTEMP_COUNT	Simple	UNSIGNED16	N	2	R	C/a	0	
171	101	SENSOR_CALTEMP_TRANSMITTER_ID	Simple	UNSIGNED16	N	2	R	C/a	0	
172	102	SENSOR_CALZERO_DATE	Simple	DATETIME	N	7	R	C/a	0	
173	103	SENSOR_CALZERO_ZERO	Simple	FLOAT	N	4	R	C/a	0.0 nA	
174	104	SENSOR_CALZERO_DELTAZERO	Simple	FLOAT	N	4	R	C/a	0.0 nA	
175	105	SENSOR_OP_TIME	Simple	FLOAT	D	4	R	C/a	0.0 h	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
176	106	SENSOR_OP_TIME_SPECIFIC0	Simple	FLOAT	D	4	R	C/a	0.0 h	
177	107	SENSOR_OP_TIME_SPECIFIC1	Simple	FLOAT	D	4	R	C/a	0.0 h	
178	108	SENSOR_OP_TIME_SPECIFIC2	Simple	FLOAT	D	4	R	C/a	0.0 h	
179	109	SENSOR_OP_TIME_SPECIFIC3	Simple	FLOAT	D	4	R	C/a	0.0 h	
180	110	SENSOR_OP_TIME_SPECIFIC4	Simple	FLOAT	D	4	R	C/a	0.0 h	
181	111	SENSOR_OP_TIME_SPECIFIC5	Simple	FLOAT	D	4	R	C/a	0.0 h	
182	112	SENSOR_OP_STERILISATIONS	Simple	UNSIGNED16	N	2	R	C/a	0	
183	113	SENSOR_OP_CIP_CYCLES	Simple	UNSIGNED16	N	2	R	C/a	0	
184	114	SENSOR_OP_CAP_CALIBRATIONS	Simple	UNSIGNED16	N	2	R	C/a	0	
185	115	SENSOR_OP_CAP_STERILISATIONS	Simple	UNSIGNED16	N	2	R	C/a	0	
186	116	SENSOR_OP_CHARGE	Simple	FLOAT	N	4	R	C/a	0.0 nAs	
187	117	SENSOR_EXTREME_TEMP_MIN	Simple	FLOAT	N	4	R	C/a	0.0 DegC	
188	118	SENSOR_EXTREME_TEMP_MAX	Simple	FLOAT	N	4	R	C/a	0.0 DegC	
189	119	DEVICE_HWID	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
190	120	DEVICE_PROJECTING	Simple	VISIBLE_STRING_16	N	16	R	C/a	---	
191	121	CPU_HWID	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
192	122	CPU_SERNUM	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
193	123	CPU_SAPCODE	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
194	124	BOOTLOADER_VERSION	Simple	VISIBLE_STRING_20	N	20	R	C/a	--.--.--	
195	125	SENSORMODULE_HWID	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
196	126	SENSORMODULE_SERNUM	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
197	127	SENSORMODULE_SAPCODE	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
198	128	SENSORMODULE_HWVER	Simple	VISIBLE_STRING_20	N	20	R	C/a	--.--.--	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
199	129	SENSORMODULE_SWVER	Simple	VISIBLE_STRING_20	N	20	R	C/a	--.--.--	
200	130	FBMODULE_HWID	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
201	131	FBMODULE_SERNUM	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
202	132	FBMODULE_SAPCODE	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
203	133	CPU_HWVER	Simple	VISIBLE_STRING_20	N	20	R	C/a	--.--.--	
204	134	FBMODULE_SWVER	Simple	VISIBLE_STRING_20	N	20	R	C/a	--.--.--	
205	135	DISPLAY_HWID	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
206	136	DISPLAY_SERNUM	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
207	137	DISPLAY_SAPCODE	Simple	VISIBLE_STRING_20	N	20	R	C/a	----	
208	138	DISPLAY_HWVER	Simple	VISIBLE_STRING_20	N	20	R	C/a	--.--.--	
209	139	DISPLAY_SWVER	Simple	VISIBLE_STRING_20	N	20	R	C/a	--.--.--	
210	140	LOGBOOK_COMMAND	Simple	LOGBOOK_COMMAND	N	7	R/W	C/a		
211	141	LOGBOOK_RESPONSE	Simple	LOGBOOK_RESPONSE	N	73	R	C/a		
212	142	TEMP_UNIT	Simple	UNSIGNED16	S	2	R/W	C/a	PU_Celsius	Values: 1001: Â°C 1002: Â°F
213	143	SENSOR_CAL_BUFFER_UNIT	Simple	UNSIGNED16	N	2	R	C/a	0.0 pH	
214	144	SENSOR_CAL_SLOPE_UNIT	Simple	UNSIGNED16	N	2	R	C/a	0.0 mV/pH	
215	145	SENSOR_CAL_SPEC_MEASVALUE_1_UNIT	Simple	UNSIGNED16	N	2	R	C/a	0.0 mV	
216	146	SENSOR_CAL_OP_HOURS	Simple	FLOAT	N	4	R	C/a	0.0 h	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
217	147	SENSOR_CALTEMP_OP_HOURS	Simple	FLOAT	N	4	R	C/a	0.0 h	

9.5.3 Layout TB_COMMON_2 (Liquiline pHORP/Cond/Oxygen)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
70	0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	
71	1	ST_REV	Simple	UNSIGNED16	D	2	R	C/a	0	
72	2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
73	3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
74	4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	
75	5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS) 4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)
76	6	MODE_BLK	Record	DS37	D	3	R	C/a	080808	
77	7	ALARM_SUM	Record	DS42	D	8	R	C/a		
78	8	MEAS_SIM_ENABLED	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
79	9	MEAS_SIM_SELECTION	Simple	UNSIGNED16	S	2	R/W	C/a	3	Values: 0: Measuring current 5: Raw value Âµs

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										1: Partial pressure 2: % saturation 3: Conc. (liquid) 4: Conc. (gaseous)
80	10	MEAS_SIM_VALUE	Simple	FLOAT	S	4	R/W	C/a	0.0	
81	11	MEAS_SIM_VALUE_UNIT	Simple	UNSIGNED16	N	2	R	C/a	0.0	
82	12	TEMP_SIM_ENABLED	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
83	13	TEMP_SIM_VALUE	Simple	FLOAT	S	4	R/W	C/a	0.5 DegC	
84	14	AVAILABILTIY	Simple	FLOAT	D	4	R	C/a	100.0 %	
85	15	MTBC	Simple	FLOAT	D	4	R	C/a	0.0 h	
86	16	MTBF	Simple	FLOAT	D	4	R	C/a	0.0 h	
87	17	MTTR	Simple	FLOAT	D	4	R	C/a	0.0 h	
88	18	TOTAL_OPERATING_TIME	Simple	FLOAT	D	4	R	C/a	0.0 h	
89	19	OPERATING_TIME_SINCE_LAST_RESET	Simple	FLOAT	D	4	R	C/a	0.0 h	
90	20	NUMBER_OF_FAILURES	Simple	UNSIGNED32	D	4	R	C/a	0	
91	21	NUMBER_OF_CALIBRATIONS	Simple	UNSIGNED32	D	4	R	C/a	0	
92	22	TIME_IN_FAILURE	Simple	FLOAT	D	4	R	C/a	0.0 h	
93	23	TIME_IN_CALIB	Simple	FLOAT	D	4	R	C/a	0.0 h	
94	24	RESET_COUNTERS	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: No 1: Yes
95	25	DATE_OF_LAST_CALIB	Simple	DATETIME	N	7	R	C/a	0	
96	26	TIME_SINCE_LAST_CALIB	Simple	FLOAT	D	4	R	C/a	0.0 d	
97	27	HEARTBEAT	Simple	UNSIGNED16	N	2	R	C/a	0	Values: 0: No 1: Yes
98	28	DATE_OF_CURRENT_CALIB_1	Simple	DATETIME	N	7	R	C/a	0	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
99	29	DATE_OF_CURRENT_CALIB_2	Simple	DATETIME	N	7	R	C/a	0	
100	30	DIAG_LIST_1	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
101	31	DIAG_LIST_2	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
102	32	DIAG_LIST_3	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
103	33	DIAG_LIST_4	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
104	34	DIAG_LIST_5	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
105	35	DIAG_LIST_6	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
106	36	DIAG_LIST_7	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										961: Cond kappa comp upper limit
107	37	DIAG_LIST_8	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
108	38	DIAG_LIST_9	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data 100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn 170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning 239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm 812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
109	39	DIAG_LIST_10	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: 3: Temp. sensor failure 4: Scanning sensor 10: Sensor initialization 11: Sensor no communication 12: Sensor failure 13: Wrong sensor type 14: Invalid sensor data

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										100: Glass impedance alarm 101: Ref. impedance alarm 102: Glass imp. too low alarm 103: Ref. imp. too low alarm 104: Sensor supply bad 106: Glass impedance warning 107: Ref. impedance warning 111: Glass imp. too low warning 112: Ref. imp. too low warning 119: Temp offset upper limit 120: Temp offset lower limit 127: Invalid TAG group 128: Invalid TAG 129: Sensor change aborted 130: Calibration active 131: PV not stable 132: Temperature not stable 133: Polarization warning 134: Zero pnt. too high alarm 135: Zero pnt. too high warning 136: Zero pnt. too low warning 137: Zero pnt. too low alarm 138: Slope too low alarm 139: Slope too low warning 140: Leakage current alarm 142: SCC electrode cond. bad 143: Slope too high alarm 144: Slope too high warning 145: Leakage current warn 148: SCC electrode sufficient 153: Operating point too high alarm 154: Operating point too high warning 155: Operating point too low warning 156: Operating point too low alarm 162: Oper.time >40Â°C alarm 163: Oper.time >120Â°C alarm 164: Oper.time >140Â°C alarm 165: Oper.time >80Â°C <100 nS alarm 166: Oper.time >15nA alarm 167: Oper.time >50nA alarm 168: Oper.time >40Â°C warn 169: Oper.time >120Â°C warn

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										170: Cap operating time alarm 171: Cap operating time warning 172: Operating time alarm 173: Oper.time >80Â°C alarm 174: Oper.time >100Â°C alarm 175: Oper.time <-300mV alarm 176: Oper.time >300mV alarm 177: Delta slope alarm 178: Delta zero alarm 179: Delta oper.point alarm 180: Cal. expired alarm 181: SIP, CIP, autoclaving alarm 182: Operating time warning 183: Oper.time >80Â°C warn 184: Oper.time >100Â°C warn 185: Oper.time <-300mV warn 186: Oper.time >300mV warn 187: Oper.time >125Â°C warn 188: Oper.time >150Â°C warn 189: Oper.time <5Â°C warn 190: Cal. expired warning 191: SIP, CIP, autoclaving warning 192: Oper.time >15nA warn 193: Oper.time >50nA warn 194: Oper.time >140Â°C warn 195: Oper.time >80Â°C <100 nS warn 196: Oper.time >125Â°C alarm 197: Oper.time >150Â°C alarm 198: Oper.time <5Â°C alarm 203: Wrong transmitter type 215: Simulation active 218: Current output not available 219: Power supply bad 222: Oper.time >160nA warn 223: Oper.time >160nA alarm 224: Oper.time >5Â°C warn 225: Oper.time >5Â°C alarm 226: Oper.time >30Â°C warn 227: Oper.time >30Â°C alarm 228: Oper.time >30nA warn 229: Oper.time >30nA alarm 238: Delta slope warning

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										239: Delta zero warning 240: Delta oper.point warning 310: Temp. slope alarm 311: Temp. slope alarm 312: No cond. detected 313: Sensor coil current too high 314: Sensor coil current too low 315: Airset not calibrated 316: Cell const. not calibrated 317: Temp. not calibrated 318: Glass imp. too high alarm 319: Ref. imp. too high alarm 320: Glass imp. too high warning 321: Ref. imp. too high warning 322: Meas. value out of range 325: Sensor value out of range 326: Internal sensor conn. broken 327: Selftest active 328: Electr. temp. 329: Sensor low signal amplitude 330: Sensor relaxation time low 331: Sensor relaxation time high 332: Sensor low signal decay 333: Sensor temperature too high 380: Comm. module defect 381: Comm. module incomp 404: Lower limit current output 405: Upper limit current output 406: SETUP active 407: Diag. active 408: Calibration aborted 409: Sensor change 501: Device open 513: Device alarm 514: Device warning 530: Logbook: 20 % remain 531: Logbook: full 532: Calibration timer expired 770: Sensor deactivated 802: PCS Alarm 810: PV upper limit alarm 811: PV lower limit alarm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										812: Temperature out of range 813: Sensor temperature out of range 814: USP alarm 840: PV upper limit warning 841: PV lower limit warning 844: USP warning 902: Cap SIP, CIP, autoclaving alm 903: Cap SIP, CIP, autoclaving warn 904: Calibration quality alarm 905: Calibration quality warning 906: Number of cap calibrations alarm 907: Number of cap calibrations warn 908: Reference calibration required 950: Conc. temp lower limit 951: Conc. temp upper limit 952: Conc. kappa lower limit 953: Conc. kappa upper limit 954: Conc. lower limit 955: Conc. upper limit 956: Cond temp lower limit 957: Cond temp upper limit 958: Cond kappa lower limit 959: Cond kappa upper limit 960: Cond kappa comp lower limit 961: Cond kappa comp upper limit
110	40	DIAG_LIST_NAMUR_1	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)
111	41	DIAG_LIST_NAMUR_2	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
112	42	DIAG_LIST_NAMUR_3	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)
113	43	DIAG_LIST_NAMUR_4	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)
114	44	DIAG_LIST_NAMUR_5	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)
115	45	DIAG_LIST_NAMUR_6	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)
116	46	DIAG_LIST_NAMUR_7	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
117	47	DIAG_LIST_NAMUR_8	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)
118	48	DIAG_LIST_NAMUR_9	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)
119	49	DIAG_LIST_NAMUR_10	Simple	UNSIGNED16	D	2	R	C/a	0	Values: 0: Failure (F) 1: Maintenance request (M) 2: Function check (C) 3: Out of specification (S) 4: Ok 5: Not configured (NC)
120	50	DIAG_LIST_TIMESTAMP_1	Simple	DATETIME	D	7	R	C/a	0	
121	51	DIAG_LIST_TIMESTAMP_2	Simple	DATETIME	D	7	R	C/a	0	
122	52	DIAG_LIST_TIMESTAMP_3	Simple	DATETIME	D	7	R	C/a	0	
123	53	DIAG_LIST_TIMESTAMP_4	Simple	DATETIME	D	7	R	C/a	0	
124	54	DIAG_LIST_TIMESTAMP_5	Simple	DATETIME	D	7	R	C/a	0	
125	55	DIAG_LIST_TIMESTAMP_6	Simple	DATETIME	D	7	R	C/a	0	
126	56	DIAG_LIST_TIMESTAMP_7	Simple	DATETIME	D	7	R	C/a	0	
127	57	DIAG_LIST_TIMESTAMP_8	Simple	DATETIME	D	7	R	C/a	0	
128	58	DIAG_LIST_TIMESTAMP_9	Simple	DATETIME	D	7	R	C/a	0	
129	59	DIAG_LIST_TIMESTAMP_10	Simple	DATETIME	D	7	R	C/a	0	
130	60	SENSOR_CAL_TYPE	Simple	UNSIGNED16	N	2	R	C/a	0	Values:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0: Adjustment 1: Calibration
131	61	CURRENT_CAL_VALID	Simple	BOOLEAN	N	1	R	C/a	False	
132	62	CIP_SETTINGS_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
133	63	CIP_LOWER_TEMP_THRESHOLD_VALUE	Simple	FLOAT	S	4	R/W	C/a	75.0 DegC	Min: 5.0 DegC Max: TB_COMMON_2.CIP_UPPER_TEMP_THRESHOLD_VALUE - 1.0 DegC
134	64	CIP_DURATION_VALUE	Simple	FLOAT	S	4	R/W	C/a	0.5 min	Min: 0.0166666666667 min Max: 4.16666666667 min
135	65	CIP_UPPER_TEMP_THRESHOLD_VALUE	Simple	FLOAT	S	4	R/W	C/a	85.0 DegC	Min: TB_COMMON_2.CIP_LOWER_TEMP_THRESHOLD_VALUE + 1.0 DegC Max: 90.0 DegC
136	66	SENSOR_INFO_CAL_BUFFER3	Simple	FLOAT	N	4	R	C/a	0.0 pH	
137	67	SENSOR_INFO_MANUFACTURER	Simple	VISIBLE_STRING_32	N	32	R	C/a	---	
138	68	SENSOR_INFO_CAL_SECONDARY_DATE_TIME	Simple	DATETIME	N	7	R	C/a	0	
139	69	SENSOR_INFO_AUTO_CLAVINGS	Simple	UNSIGNED16	N	2	R	C/a	0	
140	70	SENSOR_INFO_CAL_BUFFER1_MV	Simple	FLOAT	N	4	R	C/a	0.0 mV	
141	71	SENSOR_INFO_CAL_BUFFER1_PERCENT	Simple	FLOAT	N	4	R	C/a	0.0 %	
142	72	SENSOR_INFO_CAL_BUFFER2_PERCENT	Simple	FLOAT	N	4	R	C/a	0.0 %	
143	73	LIMIT_SWITCH_DIGITAL_OP_TIME_T1_CRITERIA	Simple	VISIBLE_STRING_24	N	24	R	C/a	> 40 Â°C / 104 Â°F	
144	74	LIMIT_SWITCH_DIGITAL_OP_TIME_T2_CRITERIA	Simple	VISIBLE_STRING_24	N	24	R	C/a	> 80 Â°C / 176 Â°F	
145	75	LIMIT_SWITCH_DIGITAL_OP_TIME_T3_CRITERIA	Simple	VISIBLE_STRING_24	N	24	R	C/a	> 120 Â°C / 248 Â°F	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
146	76	LIMIT_SWITCH_DIGITAL_OP_TIME_T4_CRITERIA	Simple	VISIBLE_STRING_24	N	24	R	C/a	< 5 Â°C / 41 Â°F	
147	77	SENSOR_INFO_CAP_CIP_CYCLES	Simple	UNSIGNED16	N	2	R	C/a	0	
148	78	SENSOR_INFO_CAP_AUTO_CLAVINGS	Simple	UNSIGNED16	N	2	R	C/a	0	
149	79	SENSOR_INFO_CAL_ZERO_QUALITY_INDEX	Simple	FLOAT	N	4	R	C/a	0.0 %	
150	80	SENSOR_INFO_CAL_POINT_AT_OXYGEN_TAU	Simple	FLOAT	N	4	R	C/a	0.0 us	
151	81	SENSOR_INFO_CAL_POINT_AT_OXYGEN_KSV	Simple	FLOAT	N	4	R	C/a	0.0 1/MPa	
152	82	SENSOR_INFO_CAL_QUALITY_INDEX	Simple	FLOAT	N	4	R	C/a	0.0 %	
153	83	SENSOR_INFO_OP_TIME_SPECIFIC8	Simple	FLOAT	D	4	R	C/a	0.0 h	
154	84	SENSOR_INFO_OP_TIME_SPECIFIC9	Simple	FLOAT	D	4	R	C/a	0.0 h	
155	85	SENSOR_INFO_OP_TIME_SPECIFIC7	Simple	FLOAT	D	4	R	C/a	0.0 h	
156	86	SENSOR_INFO_OP_TIME_SPECIFIC6	Simple	FLOAT	D	4	R	C/a	0.0 h	
157	87	SENSOR_INFO_CAL_FERMENTER_TRANSMITTER_SERIAL	Simple	VISIBLE_STRING_32	N	32	R	C/a		
158	88	SENSOR_INFO_CAL_ZERO_KSV	Simple	FLOAT	N	4	R	C/a	0.0 1/MPa	
159	89	SENSOR_INFO_CAL_ZERO_CAP_CALIBRATIONS	Simple	UNSIGNED16	N	2	R	C/a	0	
160	90	SENSOR_INFO_CAL_ZERO_OP_HOURS	Simple	FLOAT	N	4	R	C/a	0.0 h	
161	91	SENSOR_INFO_CAL_CAP_ZERO_OP_HOURS	Simple	FLOAT	N	4	R	C/a	0.0 h	
162	92	SENSOR_INFO_CAL_PAO_CALIBRATIONS	Simple	UNSIGNED16	N	2	R	C/a	0	
163	93	SENSOR_INFO_CAL_PAO_CAP_CALIBRATIONS	Simple	UNSIGNED16	N	2	R	C/a	0	
164	94	SENSOR_INFO_CAL_PAO_OP_HOURS	Simple	FLOAT	N	4	R	C/a	0.0 h	
165	95	SENSOR_INFO_CAL_CAP_PAO_OP_HOURS	Simple	FLOAT	N	4	R	C/a	0.0 h	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
166	96	SENSOR_SPEC_RES_MIN	Simple	FLOAT	N	4	R	C/a	0.0 MOhm*cm	
167	97	SENSOR_SPEC_RES_MAX	Simple	FLOAT	N	4	R	C/a	0.0 MOhm*cm	
168	98	STERILIZATION_DURATIONVALUE	Simple	FLOAT	S	4	R/W	C/a	0.333333333333 min	Min: 0.0166666666667 min Max: 4.16666666667 min
169	99	STERILIZATION_TEMP_THRESHOLD_VALUE	Simple	FLOAT	S	4	R/W	C/a	121.0 DegC	Min: 120.0 DegC Max: 150.0 DegC
170	100	REFERENCE_CAL_VALID	Simple	BOOLEAN	N	1	R	C/a	False	

9.5.4 Adressierung TB_PH_x (Liquiline pHORP)

Adressierung herstellerspezifische Transducer Blocks (pHORP)		
Block Bezeichner	**Slot**	**Index**
TB_PH_1	5	70
TB_PH_2	6	70

9.5.5 Layout TB_PH_1 (Liquiline pHORP)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
70	0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	
71	1	ST_REV	Simple	UNSIGNED16	D	2	R	C/a	0	
72	2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
73	3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
74	4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	
75	5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS) 4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)
76	6	MODE_BLK	Record	DS37	D	3	R	C/a	080808	
77	7	ALARM_SUM	Record	DS42	D	8	R	C/a		
78	8	MEASURAND	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: pH 1: ORP mV 3: ORP %

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										2: rH
79	9	MEASURAND_ANALOG	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: pH 1: ORP mV 3: ORP % 2: rH
80	10	MEASURAND_DIGITAL	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: pH 1: ORP mV 3: ORP % 2: rH
81	11	POTENTIAL_EQUALISATION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: without PM 1: with PM
82	12	POTENTIAL_EQUALISATION_ NOTANTIMONY	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: without PM 1: with PM
83	13	POTENTIAL_EQUALISATION_ ANTIMONY	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: without PM 1: with PM
84	14	SENSOR_TYPE	Simple	UNSIGNED16	S	2	R/W	C/a	9	Values: 0: Glass 1: ISFET 2: ORP 3: ISFET 4: ORP 5: Pfaudler abs 6: Pfaudler rel 7: Antimony 9: Glass 10: Pfaudler pH/ORP 11: Combined pH/ORP 12: none

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										13: Glass V2
85	15	SENSOR_TYPE_ANALOG	Simple	UNSIGNED16	S	2	R/W	C/a	9	Values: 0: Glass 1: ISFET 2: ORP 3: ISFET 4: ORP 5: Pfaudler abs 6: Pfaudler rel 7: Antimony 9: Glass 10: Pfaudler pH/ORP 11: Combined pH/ORP 12: none 13: Glass V2
86	16	SENSOR_TYPE_DIGITAL	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Glass 1: ISFET 2: ORP 3: ISFET 4: ORP 5: Pfaudler abs 6: Pfaudler rel 7: Antimony 9: Glass 10: Pfaudler pH/ORP 11: Combined pH/ORP 12: none 13: Glass V2
87	17	REFERENCE_ELECTRODE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: AGAGel 1: AgAgCl
88	18	TEMP_SENSOR	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: Pt100/Pt1000
89	19	TEMP_SENSOR_DIGITAL	Simple	UNSIGNED16	S	2	R/W	C/a	1	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Values: 0: none 1: Pt100/Pt1000
90	20	TEMP_SENSOR_ANALOG	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: Pt100/Pt1000
91	21	TEMP_SENSOR_ANTIMONY	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: none 1: Pt100/Pt1000
92	22	INTERNAL_BUFFER	Simple	FLOAT	S	4	R/W	C/a	7.0 pH	Min: -2.0 pH Max: 16.0 pH
93	23	DAMPING_MV	Simple	FLOAT	S	4	R/W	C/a	0.0 s	Min: 0.0 s Max: 600.0 s
94	24	CAL_DATA_INPUT	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
95	25	CAL_2_POINT	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
96	26	CAL_1_POINT	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
97	27	CAL_GRABSAMPLE	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
98	28	CAL_ORP_DATA_INPUT	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
99	29	CAL_ORP_1_POINT	Simple	UNSIGNED16	S	2	R/W	C/a	1	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Values: 0: off 1: on
100	30	CAL_ORP_PERC_DATA_INPUT	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
101	31	CAL_ORP_PERC_2_POINT	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
102	32	CAL_STABLE_BANDWIDTH	Simple	FLOAT	S	4	R/W	C/a	1.0 mV	Min: 1.0 mV Max: 10.0 mV
103	33	CAL_STABLE_TIMEFRAME	Simple	FLOAT	S	4	R/W	C/a	20.0 s	Min: 5.0 s Max: 60.0 s
104	34	CAL_TEMP_COMP	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: Auto comp.(ATC) 2: Man. comp.
105	35	CAL_TEMP_REFERENCE	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -50.0 DegC Max: 250.0 DegC
106	36	CAL_BUFFER_RECOGNITION	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: automatic 1: fixed 2: manual
107	37	CAL_BUFFER_RECOGNITION_ AUTO	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: automatic 1: fixed 2: manual
108	38	CAL_BUFFER_RECOGNITION_ NOTAUTO	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: automatic

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										1: fixed 2: manual
109	39	CAL_BUFFER_MANUFACTURER	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: E+H (NIST) 1: Ingold/Mettler 2: DIN 19266 3: DIN 19267 4: Merck/Riedel 6: Hamilton 5: Special buffer
110	40	CAL_BUFFER1_FIXED	Simple	UNSIGNED16	S	2	R/W	C/a	2	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
111	41	CAL_BUFFER1_FIXED_EH	Simple	UNSIGNED16	S	2	R/W	C/a	2	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
112	42	CAL_BUFFER1_FIXED_INGOLD	Simple	UNSIGNED16	S	2	R/W	C/a	7	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
113	43	CAL_BUFFER1_FIXED_DIN19266	Simple	UNSIGNED16	S	2	R/W	C/a	11	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
114	44	CAL_BUFFER1_FIXED_DIN19267	Simple	UNSIGNED16	S	2	R/W	C/a	16	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
115	45	CAL_BUFFER1_FIXED_MERCK	Simple	UNSIGNED16	S	2	R/W	C/a	21	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
116	46	CAL_BUFFER1_FIXED_SPECIAL	Simple	UNSIGNED16	S	2	R/W	C/a	24	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
117	47	CAL_BUFFER1_FIXED_HAMILTON	Simple	UNSIGNED16	S	2	R/W	C/a	32	Values:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										27: Puffer 4
118	48	CAL_BUFFER2_FIXED	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
119	49	CAL_BUFFER2_FIXED_EH	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
120	50	CAL_BUFFER2_FIXED_INGOLD	Simple	UNSIGNED16	S	2	R/W	C/a	6	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
121	51	CAL_BUFFER2_FIXED_DIN19266	Simple	UNSIGNED16	S	2	R/W	C/a	10	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
122	52	CAL_BUFFER2_FIXED_DIN19267	Simple	UNSIGNED16	S	2	R/W	C/a	14	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
123	53	CAL_BUFFER2_FIXED_MERCK	Simple	UNSIGNED16	S	2	R/W	C/a	20	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
124	54	CAL_BUFFER2_FIXED_SPECIAL	Simple	UNSIGNED16	S	2	R/W	C/a	25	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH 8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
125	55	CAL_BUFFER2_FIXED_HAMILTON	Simple	UNSIGNED16	S	2	R/W	C/a	35	Values: 0: 2.00 pH 1: 4.00 pH 2: 7.00 pH 41: 9.00 pH 3: 9.22 pH 4: 10.00 pH 42: 12.00 pH 5: 2.00 pH 6: 4.01 pH 7: 7.00 pH

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										8: 9.21 pH 9: 1.68 pH 10: 4.01 pH 11: 6.86 pH 12: 9.18 pH 13: 1.09 pH 14: 3.06 pH 15: 4.65 pH 16: 6.79 pH 17: 9.23 pH 18: 12.75 pH 19: 2.00 pH 20: 4.01 pH 21: 6.98 pH 22: 8.95 pH 23: 12.00 pH 28: 1.09 pH 29: 1.68 pH 30: 2.00 pH 31: 3.06 pH 32: 4.01 pH 33: 5.00 pH 34: 6.00 pH 35: 7.00 pH 36: 8.00 pH 37: 9.21 pH 38: 10.01 pH 39: 11.00 pH 40: 12.00 pH 24: Puffer 1 25: Puffer 2 26: Puffer 3 27: Puffer 4
126	56	CAL_BUFFER1_MAN	Simple	FLOAT	S	4	R/W	C/a	7.0 pH	Min: -2.0 pH Max: 16.0 pH
127	57	CAL_BUFFER2_MAN	Simple	FLOAT	S	4	R/W	C/a	4.0 pH	Min: -2.0 pH Max: 16.0 pH
128	58	CAL_BUFFER_USERTAB	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0: Puffer 1 1: Puffer 2 2: Puffer 3 3: Puffer 4
129	59	CAL_BUFFER_USERTAB_NAME1	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	Puffer 1	
130	60	CAL_BUFFER_USERTAB_NAME2	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	Puffer 2	
131	61	CAL_BUFFER_USERTAB_NAME3	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	Puffer 3	
132	62	CAL_BUFFER_USERTAB_NAME4	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	Puffer 4	
133	63	CAL_ISOTHERM_INTERSECTION	Simple	FLOAT	S	4	R/W	C/a	7.0 pH	Min: -2.0 pH Max: 16.0 pH
134	64	CAL_ISOTHERM_INTERSECTION_NOPFAUDLER	Simple	FLOAT	S	4	R/W	C/a	7.0 pH	Min: -2.0 pH Max: 16.0 pH
135	65	CAL_ISOTHERM_INTERSECTION_PFAUDLER3	Simple	FLOAT	S	4	R/W	C/a	1.35 pH	Min: -2.0 pH Max: 16.0 pH
136	66	CAL_ISOTHERM_INTERSECTION_PFAUDLER18	Simple	FLOAT	S	4	R/W	C/a	3.0 pH	Min: -2.0 pH Max: 16.0 pH
137	67	CAL_ORP_REFERENCE_BUFFER	Simple	FLOAT	S	4	R/W	C/a	220.0 mV	Min: -2000.0 mV Max: 2000.0 mV
138	68	CAL_ORPPERCENT_BUFFER1	Simple	FLOAT	S	4	R/W	C/a	20.0 %	Min: 0.0 % Max: 30.0 %
139	69	CAL_ORPPERCENT_BUFFER2	Simple	FLOAT	S	4	R/W	C/a	80.0 %	Min: 70.0 % Max: 100.0 %
140	70	TEMP_COMPENSATION	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: Auto comp.(ATC)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										2: Man. comp.
141	71	TEMP_REFERENCE	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -50.0 DegC Max: 250.0 DegC
142	72	MEDIUM_COMPENSATION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: 2 point 2: Table
143	73	MEDIUM_TEMP_REFERENCE	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -50.0 DegC Max: 250.0 DegC
144	74	MEDIUM_TEMPERATURE1	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -50.0 DegC Max: 250.0 DegC
145	75	MEDIUM_PH1	Simple	FLOAT	S	4	R/W	C/a	7.0 pH	Min: -2.0 pH Max: 16.0 pH
146	76	MEDIUM_TEMPERATURE2	Simple	FLOAT	S	4	R/W	C/a	40.0 DegC	Min: -50.0 DegC Max: 250.0 DegC
147	77	MEDIUM_PH2	Simple	FLOAT	S	4	R/W	C/a	7.5 pH	Min: -2.0 pH Max: 16.0 pH
148	78	SCS_REF_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
149	79	SCS_REF_FUNCTION_WITHOUTPAL	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
150	80	SCS_REF_FUNCTION_WITHPAL	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
151	81	SCS_REF_UPPER_ALARM	Simple	FLOAT	S	4	R/W	C/a	100.0 kOhm	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Min: TB_PH_1.SCS_REF_UPPER_WARNING + 0.1 kOhm Max: 1000.0 kOhm
152	82	SCS_REF_UPPER_WARNING	Simple	FLOAT	S	4	R/W	C/a	50.0 kOhm	Min: TB_PH_1.SCS_REF_LOWER_WARNING + 0.1 kOhm Max: TB_PH_1.SCS_REF_UPPER_ALARM - 0.1 kOhm
153	83	SCS_REF_LOWER_WARNING	Simple	FLOAT	S	4	R/W	C/a	1.0 kOhm	Min: TB_PH_1.SCS_REF_LOWER_ALARM + 0.1 kOhm Max: TB_PH_1.SCS_REF_UPPER_WARNING - 0.1 kOhm
154	84	SCS_REF_LOWER_ALARM	Simple	FLOAT	S	4	R/W	C/a	0.0 kOhm	Min: 0.0 kOhm Max: TB_PH_1.SCS_REF_LOWER_WARNING - 0.1 kOhm
155	85	SCS_GLASS_UPPER_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
156	86	SCS_GLASS_LOWER_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
157	87	SCS_GLASS_UPPER_ALARM	Simple	FLOAT	S	4	R/W	C/a	3000.0 MOhm	Min: TB_PH_1.SCS_GLASS_UPPER_WARNING + 0.1 MOhm Max: 10000.0 MOhm
158	88	SCS_GLASS_UPPER_WARNING	Simple	FLOAT	S	4	R/W	C/a	2500.0 MOhm	Min: TB_PH_1.SCS_GLASS_LOWER_WARNING + 0.1 MOhm Max: TB_PH_1.SCS_GLASS_UPPER_ALARM -

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0.1 MOhm
159	89	SCS_GLASS_LOWER_WARNING	Simple	FLOAT	S	4	R/W	C/a	0.1 MOhm	Min: TB_PH_1.SCS_GLASS_LOWER_ALARM + 0.1 MOhm Max: TB_PH_1.SCS_GLASS_UPPER_WARNING - 0.1 MOhm
160	90	SCS_GLASS_LOWER_ALARM	Simple	FLOAT	S	4	R/W	C/a	0.0 MOhm	Min: 0.0 MOhm Max: TB_PH_1.SCS_GLASS_LOWER_WARNING - 0.1 MOhm
161	91	SLOPE_WARNING	Simple	FLOAT	S	4	R/W	C/a	55.0 mV/pH	Min: TB_PH_1.SLOPE_ALARM + 0.01 mV/pH Max: 65.0 mV/pH
162	92	SLOPE_WARNING_NOPFAUDLER	Simple	FLOAT	S	4	R/W	C/a	55.0 mV/pH	Min: TB_PH_1.SLOPE_ALARM + 0.01 mV/pH Max: 65.0 mV/pH
163	93	SLOPE_WARNING_PFAUDLER3	Simple	FLOAT	S	4	R/W	C/a	52.0 mV/pH	Min: TB_PH_1.SLOPE_ALARM + 0.01 mV/pH Max: 65.0 mV/pH
164	94	SLOPE_WARNING_PFAUDLER18	Simple	FLOAT	S	4	R/W	C/a	48.0 mV/pH	Min: TB_PH_1.SLOPE_ALARM + 0.01 mV/pH Max: 65.0 mV/pH
165	95	SLOPE_ALARM	Simple	FLOAT	S	4	R/W	C/a	53.0 mV/pH	Min: 0.1 mV/pH Max: TB_PH_1.SLOPE_WARNING - 0.01 mV/pH
166	96	SLOPE_ALARM_NOPFAUDLER	Simple	FLOAT	S	4	R/W	C/a	53.0 mV/pH	Min: 0.1 mV/pH Max: TB_PH_1.SLOPE_WARNING - 0.01 mV/pH
167	97	SLOPE_ALARM_PFAUDLER3	Simple	FLOAT	S	4	R/W	C/a	50.0 mV/pH	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Min: 0.1 mV/pH Max: TB_PH_1.SLOPE_WARNING - 0.01 mV/pH
168	98	SLOPE_ALARM_PFAUDLER18	Simple	FLOAT	S	4	R/W	C/a	45.0 mV/pH	Min: 0.1 mV/pH Max: TB_PH_1.SLOPE_WARNING - 0.01 mV/pH
169	99	ZEROPOINT_UPPER_ALARM	Simple	FLOAT	S	4	R/W	C/a	9.0 pH	Min: TB_PH_1.ZEROPOINT_UPPER_WARNING + 0.01 pH Max: 16.0 pH
170	100	ZEROPOINT_UPPER_ALARM_ GLAS	Simple	FLOAT	S	4	R/W	C/a	9.0 pH	Min: TB_PH_1.ZEROPOINT_UPPER_WARNING + 0.01 pH Max: 16.0 pH
171	101	ZEROPOINT_UPPER_ALARM_ PFAUDLER3_AGAGEL	Simple	FLOAT	S	4	R/W	C/a	3.35 pH	Min: TB_PH_1.ZEROPOINT_UPPER_WARNING + 0.01 pH Max: 16.0 pH
172	102	ZEROPOINT_UPPER_ALARM_ PFAUDLER3_AGAGCL	Simple	FLOAT	S	4	R/W	C/a	10.65 pH	Min: TB_PH_1.ZEROPOINT_UPPER_WARNING + 0.01 pH Max: 16.0 pH
173	103	ZEROPOINT_UPPER_ALARM_ PFAUDLER18	Simple	FLOAT	S	4	R/W	C/a	12.0 pH	Min: TB_PH_1.ZEROPOINT_UPPER_WARNING + 0.01 pH Max: 16.0 pH
174	104	ZEROPOINT_UPPER_ALARM_ ANTIMONY	Simple	FLOAT	S	4	R/W	C/a	3.0 pH	Min: TB_PH_1.ZEROPOINT_UPPER_WARNING + 0.01 pH Max: 16.0 pH
175	105	ZEROPOINT_UPPER_WARNING	Simple	FLOAT	S	4	R/W	C/a	8.0 pH	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Min: TB_PH_1.ZEROPOINT_LOWER_WARNING + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_ALARM - 0.01 pH
176	106	ZEROPOINT_UPPER_WARNING_GLAS	Simple	FLOAT	S	4	R/W	C/a	8.0 pH	Min: TB_PH_1.ZEROPOINT_LOWER_WARNING + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_ALARM - 0.01 pH
177	107	ZEROPOINT_UPPER_WARNING_PFAUDLER3_AGAGEL	Simple	FLOAT	S	4	R/W	C/a	2.25 pH	Min: TB_PH_1.ZEROPOINT_LOWER_WARNING + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_ALARM - 0.01 pH
178	108	ZEROPOINT_UPPER_WARNING_PFAUDLER3_AGAGCL	Simple	FLOAT	S	4	R/W	C/a	9.65 pH	Min: TB_PH_1.ZEROPOINT_LOWER_WARNING + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_ALARM - 0.01 pH
179	109	ZEROPOINT_UPPER_WARNING_PFAUDLER18	Simple	FLOAT	S	4	R/W	C/a	11.0 pH	Min: TB_PH_1.ZEROPOINT_LOWER_WARNING + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_ALARM - 0.01 pH
180	110	ZEROPOINT_UPPER_WARNING_ANTIMONY	Simple	FLOAT	S	4	R/W	C/a	2.0 pH	Min: TB_PH_1.ZEROPOINT_LOWER_WARNING + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_ALARM -

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0.01 pH
181	111	ZEROPOINT_LOWER_WARNING	Simple	FLOAT	S	4	R/W	C/a	6.0 pH	Min: TB_PH_1.ZEROPOINT_LOWER_ALARM + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_WARNING - 0.01 pH
182	112	ZEROPOINT_LOWER_WARNING_GLAS	Simple	FLOAT	S	4	R/W	C/a	6.0 pH	Min: TB_PH_1.ZEROPOINT_LOWER_ALARM + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_WARNING - 0.01 pH
183	113	ZEROPOINT_LOWER_WARNING_PFAUDLER3_AGAGEL	Simple	FLOAT	S	4	R/W	C/a	0.35 pH	Min: TB_PH_1.ZEROPOINT_LOWER_ALARM + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_WARNING - 0.01 pH
184	114	ZEROPOINT_LOWER_WARNING_PFAUDLER3_AGAGCL	Simple	FLOAT	S	4	R/W	C/a	7.65 pH	Min: TB_PH_1.ZEROPOINT_LOWER_ALARM + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_WARNING - 0.01 pH
185	115	ZEROPOINT_LOWER_WARNING_PFAUDLER18	Simple	FLOAT	S	4	R/W	C/a	9.0 pH	Min: TB_PH_1.ZEROPOINT_LOWER_ALARM + 0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_WARNING - 0.01 pH
186	116	ZEROPOINT_LOWER_WARNING_ANTIMONY	Simple	FLOAT	S	4	R/W	C/a	0.0 pH	Min: TB_PH_1.ZEROPOINT_LOWER_ALARM +

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0.01 pH Max: TB_PH_1.ZEROPOINT_UPPER_WARNING - 0.01 pH
187	117	ZEROPOINT_LOWER_ALARM	Simple	FLOAT	S	4	R/W	C/a	5.0 pH	Min: -2.0 pH Max: TB_PH_1.ZEROPOINT_LOWER_WARNING - 0.01 pH
188	118	ZEROPOINT_LOWER_ALARM_GLAS	Simple	FLOAT	S	4	R/W	C/a	5.0 pH	Min: -2.0 pH Max: TB_PH_1.ZEROPOINT_LOWER_WARNING - 0.01 pH
189	119	ZEROPOINT_LOWER_ALARM_ PFAUDLER3_AGAGEL	Simple	FLOAT	S	4	R/W	C/a	-0.65 pH	Min: -2.0 pH Max: TB_PH_1.ZEROPOINT_LOWER_WARNING - 0.01 pH
190	120	ZEROPOINT_LOWER_ALARM_ PFAUDLER3_AGAGCL	Simple	FLOAT	S	4	R/W	C/a	6.65 pH	Min: -2.0 pH Max: TB_PH_1.ZEROPOINT_LOWER_WARNING - 0.01 pH
191	121	ZEROPOINT_LOWER_ALARM_ PFAUDLER18	Simple	FLOAT	S	4	R/W	C/a	8.0 pH	Min: -2.0 pH Max: TB_PH_1.ZEROPOINT_LOWER_WARNING - 0.01 pH
192	122	ZEROPOINT_LOWER_ALARM_ ANTIMONY	Simple	FLOAT	S	4	R/W	C/a	-1.0 pH	Min: -2.0 pH Max: TB_PH_1.ZEROPOINT_LOWER_WARNING - 0.01 pH
193	123	OPERATINGPOINT_UPPER_ALARM	Simple	FLOAT	S	4	R/W	C/a	300.0 mV	Min: TB_PH_1.OPERATINGPOINT_UPPER_ WARNING + 1.0 mV Max: 2000.0 mV

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
194	124	OPERATINGPOINT_UPPER_ WARNING	Simple	FLOAT	S	4	R/W	C/a	250.0 mV	Min: TB_PH_1.OPERATINGPOINT_LOWER_ WARNING + 1.0 mV Max: TB_PH_1.OPERATINGPOINT_UPPER_ ALARM - 1.0 mV
195	125	OPERATINGPOINT_LOWER_ WARNING	Simple	FLOAT	S	4	R/W	C/a	-250.0 mV	Min: TB_PH_1.OPERATINGPOINT_LOWER_ ALARM + 1.0 mV Max: TB_PH_1.OPERATINGPOINT_UPPER_ WARNING - 1.0 mV
196	126	OPERATINGPOINT_LOWER_ALARM	Simple	FLOAT	S	4	R/W	C/a	-300.0 mV	Min: -2000.0 mV Max: TB_PH_1.OPERATINGPOINT_LOWER_ WARNING - 1.0 mV
197	127	ORPMEAS_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
198	128	ORPMEAS_UPPER_ALARM	Simple	FLOAT	S	4	R/W	C/a	900.0 mV	Min: TB_PH_1.ORPMEAS_UPPER_WARNING + 1.0 mV Max: 2000.0 mV
199	129	ORPMEAS_UPPER_WARNING	Simple	FLOAT	S	4	R/W	C/a	700.0 mV	Min: TB_PH_1.ORPMEAS_LOWER_WARNING + 1.0 mV Max: TB_PH_1.ORPMEAS_UPPER_ALARM - 1.0 mV
200	130	ORPMEAS_LOWER_WARNING	Simple	FLOAT	S	4	R/W	C/a	-700.0 mV	Min: TB_PH_1.ORPMEAS_LOWER_ALARM + 1.0 mV Max: TB_PH_1.ORPMEAS_UPPER_WARNING - 1.0 mV
201	131	ORPMEAS_LOWER_ALARM	Simple	FLOAT	S	4	R/W	C/a	-900.0 mV	Min: -2000.0 mV Max:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										TB_PH_1.ORPMEAS_LOWER_WARNING - 1.0 mV
202	132	SCC_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
203	133	OPERATING_TIME_MINUS300MV_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_PH_1.OPERATING_TIME_ MINUS300MV_ALARM - 1.0 h
204	134	OPERATING_TIME_MINUS300MV_ ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_PH_1.OPERATING_TIME_ MINUS300MV_WARNING + 1.0 h Max: 50000.0 h
205	135	OPERATING_TIME_PLUS300MV_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_PH_1.OPERATING_TIME_ PLUS300MV_ALARM - 1.0 h
206	136	OPERATING_TIME_PLUS300MV_ ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_PH_1.OPERATING_TIME_ PLUS300MV_WARNING + 1.0 h Max: 50000.0 h
207	137	DELTA_SLOPE_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
208	138	DELTA_SLOPE_WARNING	Simple	FLOAT	S	4	R/W	C/a	5.0 mV/pH	Min: 0.1 mV/pH Max: TB_PH_1.DELTA_SLOPE_ALARM - 0.01 mV/pH
209	139	DELTA_SLOPE_ALARM	Simple	FLOAT	S	4	R/W	C/a	6.0 mV/pH	Min: TB_PH_1.DELTA_SLOPE_WARNING + 0.01 mV/pH Max: 10.0 mV/pH
210	140	DELTA_OPERATINGPOINT_ FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
211	141	DELTA_OPERATINGPOINT_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10.0 mV	Min: 1.0 mV Max: TB_PH_1.DELTA_OPERATINGPOINT_ALARM - 1.0 mV
212	142	DELTA_OPERATINGPOINT_ ALARM	Simple	FLOAT	S	4	R/W	C/a	15.0 mV	Min: TB_PH_1.DELTA_OPERATINGPOINT_ WARNING + 1.0 mV Max: 200.0 mV
213	143	DELTA_ZEROPOINT_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
214	144	DELTA_ZEROPOINT_WARNING	Simple	FLOAT	S	4	R/W	C/a	0.5 pH	Min: 0.0 pH Max: TB_PH_1.DELTA_ZEROPOINT_ALARM - 0.01 pH
215	145	DELTA_ZEROPOINT_ALARM	Simple	FLOAT	S	4	R/W	C/a	1.0 pH	Min: TB_PH_1.DELTA_ZEROPOINT_WARNING + 0.01 pH Max: 2.0 pH
216	146	FORMAT_PH_VALUE	Simple	UNSIGNED16	S	2	R/W	C/a	0x112	Values: 0x111: x.x 0x112: x.xx
217	147	FORMAT_RH_VALUE	Simple	UNSIGNED16	S	2	R/W	C/a	0x111	Values: 0x110: xx 0x111: xx.x

9.5.6 Layout TB_PH_2 (Liquiline pHORP)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
70	0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	
71	1	ST_REV	Simple	UNSIGNED16	D	2	R	C/a	0	
72	2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
73	3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
74	4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	
75	5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS) 4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)
76	6	MODE_BLK	Record	DS37	D	3	R	C/a	080808	
77	7	ALARM_SUM	Record	DS42	D	8	R	C/a		
78	8	SLOPE_ORPPERCENT	Simple	FLOAT	N	4	R	C/a	0.03	
79	9	OPERATING_POINT	Simple	FLOAT	N	4	R	C/a	0.0 mV	
80	10	OFFSET_PH	Simple	FLOAT	S	4	R/W	C/a	0.0 pH	
81	11	OFFSET_ORPMV	Simple	FLOAT	N	4	R	C/a	0.0 mV	
82	12	OFFSET_ORPPERCENT	Simple	FLOAT	N	4	R	C/a	0.0 mV	
83	13	REF_IMPEDANCE	Record	DS60	D	12	R	C/a	None	
84	14	REMOTECAL_COMMAND	Simple	UNSIGNED8	N	1	R/W	C/a	0	Values: 0: Command_NOP 1: Command_CalibrateBuffer1 2: Command_CalibrateBuffer2 3: Command_Takeover 4: Command_DiscardOrAbort
85	15	REMOTECAL_STATUS	Simple	UNSIGNED8	D	1	R	C/a	0	Values:

										0: Status_Inactive 1: Status_Buffer1Running 2: Status_Buffer1Unstable 3: Status_Buffer1Done 4: Status_Buffer2Running 5: Status_Buffer2Unstable 6: Status_Buffer2Done 7: Status_ResultsInvalid 8: Status_ResultsOK
86	16	REMOTECAL_ACTIVATION	Simple	UNSIGNED8	N	1	R/W	C/a	0	
87	17	REMOTECAL_ACTIVATIONSTATE	Simple	UNSIGNED8	D	1	R	C/a	0	
88	18	TABLE_BUFFER_ENTRY	Simple	UNSIGNED8	N	1	R/W	C/a		Min: -50.0 Max: 250.0
89	19	TABLE_BUFFER_X	Simple	FLOAT	N	4	R/W	C/a		Min: -50.0 Max: 250.0
90	20	TABLE_BUFFER_Y	Simple	FLOAT	N	4	R/W	C/a		Min: -50.0 Max: 250.0
91	21	TABLE_BUFFER_MIN	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
92	22	TABLE_BUFFER_MAX	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
93	23	TABLE_BUFFER_OP_CODE	Simple	UNSIGNED8	N	1	R/W	C/a		Min: -50.0 Max: 250.0
94	24	TABLE_BUFFER_STATUS	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
95	25	TABLE_BUFFER_CURRENT	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
96	26	TABLE_MEDIUMSCOMP_ENTRY	Simple	UNSIGNED8	N	1	R/W	C/a		Min: -50.0 Max: 250.0
97	27	TABLE_MEDIUMSCOMP_X	Simple	FLOAT	N	4	R/W	C/a		Min: -50.0

										Max: 250.0
98	28	TABLE_MEDIUMSCOMP_Y	Simple	FLOAT	N	4	R/W	C/a		Min: -50.0 Max: 250.0
99	29	TABLE_MEDIUMSCOMP_MIN	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
100	30	TABLE_MEDIUMSCOMP_MAX	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
101	31	TABLE_MEDIUMSCOMP_OP_CODE	Simple	UNSIGNED8	N	1	R/W	C/a		Min: -50.0 Max: 250.0
102	32	TABLE_MEDIUMSCOMP_STATUS	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
103	33	TABLE_MEDIUMSCOMP_CURRENT	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
104	34	CAL_BUFFER1_MVVALUE	Simple	FLOAT	N	4	R	C/a	0.0 mV	
105	35	CAL_BUFFER2_MVVALUE	Simple	FLOAT	N	4	R	C/a	0.0 mV	
106	36	CAL_ZEROPOINT_TEMPORARY	Simple	FLOAT	N	4	R	C/a	0.0 pH	
107	37	CAL_SLOPE_TEMPORARY	Simple	FLOAT	N	4	R	C/a	0.0 mV/pH	
108	38	ISFET_LEAKAGE_CURRENT	Record	DS60	D	12	R	C/a	None	
109	39	ADJUSTMENT_STORAGE	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: Sensor 1: Transmitter
110	40	INTERFACE_LEVEL	Simple	UNSIGNED16	N	2	R	C/a	0	Values: 0: Glass 1: Pfaudler
111	41	ZEROPOINT_UPPER_ALARM_ MEMOSENS_PFAUDLER	Simple	FLOAT	S	4	R/W	C/a	10.5 pH	Min: TB_PH_2.ZEROPOINT_UPPER_WARNING_ MEMOSENS_PFAUDLER + 0.01 pH Max: 16.0 pH
112	42	ZEROPOINT_UPPER_WARNING_ MEMOSENS_PFAUDLER	Simple	FLOAT	S	4	R/W	C/a	9.5 pH	Min:

										TB_PH_2.ZEROPOINT_LOWER_WARNING_ MEMOSENS_PFAUDLER + 0.01 pH Max: TB_PH_2.ZEROPOINT_UPPER_ALARM_ MEMOSENS_PFAUDLER - 0.01 pH
113	43	ZEROPOINT_LOWER_WARNING_ MEMOSENS_PFAUDLER	Simple	FLOAT	S	4	R/W	C/a	6.5 pH	Min: TB_PH_2.ZEROPOINT_LOWER_ALARM_ MEMOSENS_PFAUDLER + 0.01 pH Max: TB_PH_2.ZEROPOINT_UPPER_WARNING_ MEMOSENS_PFAUDLER - 0.01 pH
114	44	ZEROPOINT_LOWER_ALARM_ MEMOSENS_PFAUDLER	Simple	FLOAT	S	4	R/W	C/a	5.5 pH	Min: -2.0 pH Max: TB_PH_2.ZEROPOINT_LOWER_WARNING_ MEMOSENS_PFAUDLER - 0.01 pH
115	45	CIP_PH_TYPE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: acidic 1: alkaline
116	46	CUSTOM_SENSOR_TAG_INFO	Simple	VISIBLE_STRING_16	N	16	R	C/a	---	
117	47	CUSTOM_SENSOR_TAG	Simple	VISIBLE_STRING_16	N	16	R/W	C/a	---	
118	48	CIP_PH_THRESHOLD_VALUE	Simple	FLOAT	S	4	R/W	C/a	11.0 pH	Min: 2.0 pH Max: 11.0 pH
119	49	SENSOR_DEACTIVATION_STATE	Simple	UNSIGNED16	N	2	R	C/a	1	Values: 0: deactivated 1: active
120	50	NUMBER_AUTO_CLAV_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
121	51	LIMIT_SWITCH_DIGITAL_AUTO_ CLAV_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	50.0	Min: TB_PH_2.LIMIT_SWITCH_DIGITAL_ AUTO_CLAV_LIMIT_WARNING + 1.0 Max: 99.0
122	52	LIMIT_SWITCH_DIGITAL_AUTO_ CLAV_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	30.0	Min: 1.0 Max: TB_PH_2.LIMIT_SWITCH_DIGITAL_

										AUTO_CLAV_LIMIT_ALARM - 1.0
123	53	NUMBER_CIP_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
124	54	LIMIT_SWITCH_DIGITAL_CIP_ LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	80.0	Min: 1.0 Max: TB_PH_2.LIMIT_SWITCH_DIGITAL_ CIP_LIMIT_ALARM - 1.0
125	55	LIMIT_SWITCH_DIGITAL_CIP_ LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	100.0	Min: TB_PH_2.LIMIT_SWITCH_DIGITAL_ CIP_LIMIT_WARNING + 1.0 Max: 200.0

9.5.7 Adressierung TB_COND_1 (Liquiline Cond)

Adressierung herstellerspezifische Transducer Blocks (Cond)		
Block Bezeichner	**Slot**	**Index**
TB_COND_1	5	70

9.5.8 Layout TB_COND_1 (Liquiline Cond)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
70	0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	
71	1	ST_REV	Simple	UNSIGNED16	D	2	R	C/a	0	
72	2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
73	3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
74	4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	
75	5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS) 4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)
76	6	MODE_BLK	Record	DS37	D	3	R	C/a	080808	
77	7	ALARM_SUM	Record	DS42	D	8	R	C/a		
78	8	MEAS_MODE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Conductivity 1: Resistivity 2: Concentration
79	9	MEAS_MODE_CONDUCTIVE	Simple	UNSIGNED16	S	2	R/W	C/a	0	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Values: 0: Conductivity 1: Resistivity 2: Concentration
80	10	MEAS_MODE_INDUCTIVE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Conductivity 1: Resistivity 2: Concentration
81	11	MEAS_PRINCIPLE	Simple	UNSIGNED16	N	2	R	C/a	0	Values: 0: Conductive 1: Inductive
82	12	MEDIUM_TYPE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: NaOH 0..15% 1: NaOH 25..50% 2: HCl 0..20% 3: HNO3 0..25% 12: HNO3 24..30% 4: H2SO4 0..28% 5: H2SO4 40..80% 11: H2SO4 93..100% 6: H3PO4 0..40% 13: NaCl 0..26% 7: UserTabC1 8: UserTabC2 9: UserTabC3 10: UserTabC4
83	13	TEMP_COMP	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: None 1: linear 2: NaCl (IEC 746-3) 10: Water ISO7888 (20Â°C) 3: Water ISO7888 (25Â°C) 4: UPW NaCl 5: UPW HCl 6: UserTabT1 7: UserTabT2

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										8: UserTabT3 9: UserTabT4
84	14	FACTOR_ALPHA	Simple	FLOAT	S	4	R/W	C/a	2.1 %/K	Min: 0.0 %/K Max: 20.0 %/K
85	15	ALPHA_REF_TEMP	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -5.0 DegC Max: 100.0 DegC
86	16	TEMP_SOURCE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Temp.sensor 1: Manual input
87	17	TEMP_SOURCE_PT1000	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Temp.sensor 1: Manual input
88	18	TEMP_SOURCE_NOT_PT1000	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: Temp.sensor 1: Manual input
89	19	MEDIUM_TEMP	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -50.0 DegC Max: 250.0 DegC
90	20	SENSOR_TYPE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: 2 electr. sensor 1: 4 electr. sensor 2: 4 electr. sensor
91	21	CELL_CONSTANT	Simple	FLOAT	S	4	R/W	C/a	0.1 1/cm	Min: 0.0025 1/cm Max: 99.99 1/cm
92	22	CELL_CONSTANT_CONDUCTIVE	Simple	FLOAT	S	4	R/W	C/a	0.1 1/cm	Min: 0.0025 1/cm Max: 99.99 1/cm
93	23	CELL_CONSTANT_INDUCTIVE	Simple	FLOAT	S	4	R/W	C/a	2.0 1/cm	Min: 0.0025 1/cm Max: 99.99 1/cm

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
94	24	INSTALLATION_FACTOR	Simple	FLOAT	S	4	R/W	C/a	1.0	Min: 0.1 Max: 5.0
95	25	TEMP_SENSOR	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: Pt100/Pt1000
96	26	TEMP_SENSOR_DIGITAL	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: Pt100/Pt1000
97	27	TEMP_SENSOR_ANALOG	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: Pt100/Pt1000
98	28	CABLE_RESISTANCE	Simple	FLOAT	S	4	R/W	C/a	0.0 Ohm	Min: 0.0 Ohm Max: 99.99 Ohm
99	29	CABLE_LENGTH	Simple	FLOAT	S	4	R/W	C/a	0.0 m	
100	30	TC_TABLE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: UserTabT1 1: UserTabT2 2: UserTabT3 3: UserTabT4
101	31	TC_TABLE_NAME1	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	UserTabT1	
102	32	TC_TABLE_NAME2	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	UserTabT2	
103	33	TC_TABLE_NAME3	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	UserTabT3	
104	34	TC_TABLE_NAME4	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	UserTabT4	
105	35	TC_TABLE_MODE1	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Factor alpha 1: Conductivity

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
106	36	TC_TABLE_MODE2	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Factor alpha 1: Conductivity
107	37	TC_TABLE_MODE3	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: Factor alpha 1: Conductivity
108	38	TC_TABLE_MODE4	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: Factor alpha 1: Conductivity
109	39	TC_TABLE_ALPHA_REF_TEMP1	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -5.0 DegC Max: 100.0 DegC
110	40	TC_TABLE_ALPHA_REF_TEMP2	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -5.0 DegC Max: 100.0 DegC
111	41	TC_TABLE_ALPHA_REF_TEMP3	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -5.0 DegC Max: 100.0 DegC
112	42	TC_TABLE_ALPHA_REF_TEMP4	Simple	FLOAT	S	4	R/W	C/a	25.0 DegC	Min: -5.0 DegC Max: 100.0 DegC
113	43	CONC_TABLE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: UserTabC1 1: UserTabC2 2: UserTabC3 3: UserTabC4
114	44	CONC_TABLE_NAME1	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	UserTabC1	
115	45	CONC_TABLE_NAME2	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	UserTabC2	
116	46	CONC_TABLE_NAME3	Simple	VISIBLE_STRING_10	S	10	R/W	C/a	UserTabC3	
117	47	CONC_TABLE_NAME4	Simple	VISIBLE_STRING_	S	10	R/W	C/a	UserTabC4	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
				10						
118	48	CONC_TABLE_MODE1	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: without temp. comp 1: with temp. comp
119	49	CONC_TABLE_MODE2	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: without temp. comp 1: with temp. comp
120	50	CONC_TABLE_MODE3	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: without temp. comp 1: with temp. comp
121	51	CONC_TABLE_MODE4	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: without temp. comp 1: with temp. comp
122	52	CONC_TABLE_UNIT1	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: % 2: ppm 3: mg/l 4: TDS
123	53	CONC_TABLE_UNIT2	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: % 2: ppm 3: mg/l 4: TDS
124	54	CONC_TABLE_UNIT3	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: % 2: ppm 3: mg/l 4: TDS

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
125	55	CONC_TABLE_UNIT4	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: none 1: % 2: ppm 3: mg/l 4: TDS
126	56	PHARMAWATER_TYPE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 4: USP 1: EP 3: PW
127	57	PHARMAWATER_TYPE_ CONDUCTIVE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 4: USP 1: EP 3: PW
128	58	PHARMAWATER_TYPE_ INDUCTIVE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 4: USP 1: EP 3: PW
129	59	PHARMAWATER_THRESHOLD	Simple	FLOAT	S	4	R/W	C/a	80.0 %	Min: 10.0 % Max: 99.9 %
130	60	PHARMAWATER_HYSTERESIS	Simple	FLOAT	S	4	R/W	C/a	2.0 %	Min: 2.0 % Max: 9.9 %
131	61	PHARMAWATER_DELAY	Simple	FLOAT	S	4	R/W	C/a	0.0 s	Min: 0.0 s Max: 3600.0 s
132	62	PHARMAWATER_FALL_DELAY	Simple	FLOAT	S	4	R/W	C/a	0.0 s	Min: 0.0 s Max: 3600.0 s
133	63	CAL_AIRSET	Simple	UNSIGNED16	S	2	R/W	C/a	1	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Values: 0: off 1: on
134	64	CAL_CELL_CONSTANT	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
135	65	CAL_INSTALLATION_FACTOR	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
136	66	OPERATING_TIME_140C_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COND_1.OPERATING_TIME_140C_ ALARM - 1.0 h
137	67	OPERATING_TIME_140C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COND_1.OPERATING_TIME_140C_ WARNING + 1.0 h Max: 50000.0 h
138	68	OPERATING_TIME_80C100NS_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COND_1.OPERATING_TIME_ 80C100NS_ALARM - 1.0 h
139	69	OPERATING_TIME_80C100NS_ ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COND_1.OPERATING_TIME_ 80C100NS_WARNING + 1.0 h Max: 50000.0 h
140	70	OPERATING_TIME_125C_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COND_1.OPERATING_TIME_125C_ ALARM - 1.0 h
141	71	OPERATING_TIME_125C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COND_1.OPERATING_TIME_125C_ WARNING + 1.0 h

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Max: 50000.0 h
142	72	OPERATING_TIME_150C_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COND_1.OPERATING_TIME_150C_ ALARM - 1.0 h
143	73	OPERATING_TIME_150C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COND_1.OPERATING_TIME_150C_ WARNING + 1.0 h Max: 50000.0 h
144	74	OPERATING_TIME_5C_WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COND_1.OPERATING_TIME_5C_ ALARM - 1.0 h
145	75	OPERATING_TIME_5C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COND_1.OPERATING_TIME_5C_ WARNING + 1.0 h Max: 50000.0 h
146	76	CONDUCTIVITY_UNIT	Simple	UNSIGNED16	S	2	R/W	C/a	PU_MilliSiemens PerCentiMeter	Values: 1552: ÂµS/cm 1302: mS/cm 1551: S/cm 1554: ÂµS/m 1553: mS/m 1299: S/m
147	77	RESISTIVITY_UNIT	Simple	UNSIGNED16	S	2	R/W	C/a	PU_MegaOhmCe ntiMeter	Values: 1555: MÎ©*cm 1294: kÎ©*m 1556: kÎ©*cm
148	78	TABLE_TC_ENTRY	Simple	UNSIGNED8	N	1	R/W	C/a		Min: -50.0 Max: 250.0
149	79	TABLE_TC_X_VALUE	Simple	FLOAT	N	4	R/W	C/a		Min: -50.0 Max: 250.0

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
150	80	TABLE_TC_Y_VALUE	Simple	FLOAT	N	4	R/W	C/a		Min: -50.0 Max: 250.0
151	81	TABLE_TC_Z_VALUE	Simple	FLOAT	N	4	R/W	C/a		Min: -50.0 Max: 250.0
152	82	TABLE_TC_MIN	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
153	83	TABLE_TC_MAX	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
154	84	TABLE_TC_OP_CODE	Simple	UNSIGNED8	N	1	R/W	C/a		Min: -50.0 Max: 250.0
155	85	TABLE_TC_STATUS	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
156	86	TABLE_TC_CURRENT	Simple	UNSIGNED8	N	1	R	C/a		Min: -50.0 Max: 250.0
157	87	TABLE_CONC_ENTRY	Simple	UNSIGNED8	N	1	R/W	C/a		Min: 0.0 Max: 200.0
158	88	TABLE_CONC_X_VALUE	Simple	FLOAT	N	4	R/W	C/a		Min: 0.0 Max: 200.0
159	89	TABLE_CONC_Y_VALUE	Simple	FLOAT	N	4	R/W	C/a		Min: 0.0 Max: 200.0
160	90	TABLE_CONC_Z_VALUE	Simple	FLOAT	N	4	R/W	C/a		Min: 0.0 Max: 200.0
161	91	TABLE_CONC_MIN	Simple	UNSIGNED8	N	1	R	C/a		Min: 0.0 Max: 200.0
162	92	TABLE_CONC_MAX	Simple	UNSIGNED8	N	1	R	C/a		

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Min: 0.0 Max: 200.0
163	93	TABLE_CONC_OP_CODE	Simple	UNSIGNED8	N	1	R/W	C/a		Min: 0.0 Max: 200.0
164	94	TABLE_CONC_STATUS	Simple	UNSIGNED8	N	1	R	C/a		Min: 0.0 Max: 200.0
165	95	TABLE_CONC_CURRENT	Simple	UNSIGNED8	N	1	R	C/a		Min: 0.0 Max: 200.0
166	96	PCS_BANDWIDTH	Simple	FLOAT	S	4	R/W	C/a	0.1 %	Min: 0.01 % Max: 2.0 %
167	97	OPERATING_TIME_120C_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_COND_1.OPERATING_TIME_120C_ ALARM - 1.0 h
168	98	OPERATING_TIME_120C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_COND_1.OPERATING_TIME_120C_ WARNING + 1.0 h Max: 50000.0 h
169	99	MEAS_VAL_FORMAT	Simple	UNSIGNED16	S	2	R/W	C/a	95	Values: 95: Auto 79: Auto 80: xxxx 81: xxx.x 370: xx.xx 371: x.xxx
170	100	MEAS_VAL_FORMAT_2POL	Simple	UNSIGNED16	S	2	R/W	C/a	95	Values: 95: Auto 79: Auto 80: xxxx 81: xxx.x

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										370: xx.xx 371: x.xxx
171	101	MEAS_VAL_FORMAT_4POL	Simple	UNSIGNED16	S	2	R/W	C/a	79	Values: 95: Auto 79: Auto 80: xxxx 81: xxx.x 370: xx.xx 371: x.xxx

9.5.9 Adressierung TB_DO_1 (Liquiline Oxygen)

Adressierung herstellerspezifische Transducer Blocks (Oxygen)		
Block Bezeichner	**Slot**	**Index**
TB_DO_1	5	70

9.5.10 Layout TB_DO_1 (Liquiline Oxygen)

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
70	0	BLOCKOBJ	Record	DS32	Cst	20	R	C/a	0	
71	1	ST_REV	Simple	UNSIGNED16	D	2	R	C/a	0	
72	2	TAG_DESC	Simple	VISIBLE_STRING_32	S	32	R/W	C/a		
73	3	STRATEGY	Simple	UNSIGNED16	S	2	R/W	C/a	0	
74	4	ALERT_KEY	Simple	UNSIGNED8	S	1	R/W	C/a	0	
75	5	TARGET_MODE	Simple	UNSIGNED8	S	1	R/W	C/a	8	Values: 0: None 1: Remote output (ROUT) 2: Remote cascade (RCAS) 4: Cascade (CAS) 8: AUTO 16: MAN 32: Local override (LO) 64: Initialization manual (IMan) 128: Out of Service (O/S)
76	6	MODE_BLK	Record	DS37	D	3	R	C/a	080808	
77	7	ALARM_SUM	Record	DS42	D	8	R	C/a		
78	8	SENSOR_TYPE	Simple	UNSIGNED16	N	2	R	C/a	0	Values: 0: COS21D A 1: COS21D B 2: COS21D C 3: COS51D 50um

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										4: COS51D 25um 5: COS81D 6: COS22D
79	9	MEASURED_VALUE	Simple	UNSIGNED16	S	2	R/W	C/a	3	Values: 0: Measuring current 5: Raw value Âµs 1: Partial pressure 2: % saturation 3: Conc. (liquid) 4: Conc. (gaseous)
80	10	CONC_UNIT	Simple	UNSIGNED16	S	2	R/W	C/a	PU_MilliGramPer Liter	Values: 1558: mg/l 1559: Âµg/l 1423: ppm 1424: ppb
81	11	CONC_GAS_UNIT	Simple	UNSIGNED16	S	2	R/W	C/a	PU_PercentVol	Values: 1562: %Vol 34021: ppmVol
82	12	MEDIUM_PRESSURE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Process pressure 1: Air pressure 2: Altitude
83	13	MEDIUM_PRESSURE_COMP	Simple	FLOAT	S	4	R/W	C/a	1013.0 hPa	Min: 500.0 hPa Max: 9999.9 hPa
84	14	AIR_PRESSURE	Simple	FLOAT	S	4	R/W	C/a	1013.0 hPa	Min: 500.0 hPa Max: 9999.9 hPa
85	15	ALTITUDE	Simple	FLOAT	S	4	R/W	C/a	0.0 m	Min: 0.0 m Max: 4000.0 m
86	16	SALINITY	Simple	FLOAT	S	4	R/W	C/a	0.0 g/kg	Min: 0.0 g/kg Max: 40.0 g/kg

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
87	17	POL_VOLTAGE_MODE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Internal 1: Variable 2: off
88	18	POL_VOLTAGE	Simple	FLOAT	S	4	R/W	C/a	650.0 mV	Min: 0.0 mV Max: 750.0 mV
89	19	CAL_SLOPE	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
90	20	CAL_ZEROPOINT	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
91	21	CAL_GRABSAMPLE	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
92	22	CAL_STABLE_DELTA_CURRENT	Simple	FLOAT	S	4	R/W	C/a	0.2 %	Min: 0.1 % Max: 2.0 %
93	23	CAL_STABLE_TIME	Simple	FLOAT	S	4	R/W	C/a	10.0 s	Min: 5.0 s Max: 60.0 s
94	24	CAL_MEDIUM_PRESSURE	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: Process pressure 1: Air pressure 2: Altitude 4: As in measurement
95	25	CAL_MEDIUM_PRESSURE_COMP	Simple	FLOAT	S	4	R/W	C/a	1013.0 hPa	Min: 500.0 hPa Max: 9999.9 hPa
96	26	CAL_AIR_PRESSURE	Simple	FLOAT	S	4	R/W	C/a	1013.0 hPa	Min: 500.0 hPa Max: 1500.0 hPa

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
97	27	CAL_ALTITUDE	Simple	FLOAT	S	4	R/W	C/a	0.0 m	Min: 0.0 m Max: 4000.0 m
98	28	CAL_REL_HUMIDITY	Simple	FLOAT	S	4	R/W	C/a	50.0 %	Min: 0.0 % Max: 100.0 %
99	29	SLOPE_UPPER_ALARM	Simple	FLOAT	S	4	R/W	C/a	160.0 %	Min: TB_DO_1.SLOPE_UPPER_WARNING + 0.1 % Max: 250.0 %
100	30	SLOPE_UPPER_WARNING	Simple	FLOAT	S	4	R/W	C/a	140.0 %	Min: TB_DO_1.SLOPE_LOWER_WARNING + 0.1 % Max: TB_DO_1.SLOPE_UPPER_ALARM - 0.1 %
101	31	SLOPE_LOWER_WARNING	Simple	FLOAT	S	4	R/W	C/a	60.0 %	Min: TB_DO_1.SLOPE_LOWER_ALARM + 0.1 % Max: TB_DO_1.SLOPE_UPPER_WARNING - 0.1 %
102	32	SLOPE_LOWER_ALARM	Simple	FLOAT	S	4	R/W	C/a	40.0 %	Min: 0.0 % Max: TB_DO_1.SLOPE_LOWER_WARNING - 0.1 %
103	33	ZEROPOINT_UPPER_ALARM	Simple	FLOAT	S	4	R/W	C/a	2.0 nA	Min: TB_DO_1.ZEROPOINT_UPPER_WARNING + 0.01 nA Max: 10.0 nA
104	34	ZEROPOINT_UPPER_WARNING	Simple	FLOAT	S	4	R/W	C/a	1.0 nA	Min: TB_DO_1.ZEROPOINT_LOWER_WARNING + 0.01 nA Max: TB_DO_1.ZEROPOINT_UPPER_ALARM - 0.01 nA
105	35	ZEROPOINT_LOWER_WARNING	Simple	FLOAT	S	4	R/W	C/a	-1.0 nA	Min:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										TB_DO_1.ZEROPOINT_LOWER_ALARM + 0.01 nA Max: TB_DO_1.ZEROPOINT_UPPER_WARNING - 0.01 nA
106	36	ZEROPOINT_LOWER_ALARM	Simple	FLOAT	S	4	R/W	C/a	-2.0 nA	Min: -10.0 nA Max: TB_DO_1.ZEROPOINT_LOWER_WARNING - 0.01 nA
107	37	OPERATING_TIME_40C_WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_DO_1.OPERATING_TIME_40C_ALARM - 1.0 h
108	38	OPERATING_TIME_40C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_40C_ WARNING + 1.0 h Max: 50000.0 h
109	39	OPERATING_TIME_15NA_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_DO_1.OPERATING_TIME_15NA_ ALARM - 1.0 h
110	40	OPERATING_TIME_15NA_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_15NA_ WARNING + 1.0 h Max: 50000.0 h
111	41	OPERATING_TIME_50NA_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_DO_1.OPERATING_TIME_50NA_ ALARM - 1.0 h
112	42	OPERATING_TIME_50NA_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_50NA_WARNING + 1.0 h Max: 50000.0 h
113	43	OPERATING_TIME_5C_WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										Max: TB_DO_1.OPERATING_TIME_5C_ ALARM - 1.0 h
114	44	OPERATING_TIME_5C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_5C_ WARNING + 1.0 h Max: 50000.0 h
115	45	OPERATING_TIME_30C_WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_DO_1.OPERATING_TIME_30C_ALARM - 1.0 h
116	46	OPERATING_TIME_30C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_30C_ WARNING + 1.0 h Max: 50000.0 h
117	47	OPERATING_TIME_30NA_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_DO_1.OPERATING_TIME_30NA_ ALARM - 1.0 h
118	48	OPERATING_TIME_30NA_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_30NA_ WARNING + 1.0 h Max: 50000.0 h
119	49	OPERATING_TIME_160NA_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_DO_1.OPERATING_TIME_160NA_ ALARM - 1.0 h
120	50	OPERATING_TIME_160NA_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_160NA_ WARNING + 1.0 h Max: 50000.0 h
121	51	SLOPE	Simple	FLOAT	N	4	R	C/a	100.0 %	
122	52	ZEROPOINT	Simple	FLOAT	N	4	R	C/a	0.0 nA	
123	53	SENSOR_CAL_ZERO_VALID	Simple	UNSIGNED8	N	1	R	C/a	False	
124	54	LED_TEMP_MODE	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										0: off 1: on
125	55	LED_TEMP_THRESHOLD	Simple	FLOAT	S	4	R/W	C/a	80.0 DegC	Min: 30.0 DegC Max: 130.0 DegC
126	56	LED_MEASURING_INTERVAL	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: 1 second 1: 3 seconds 2: 10 seconds 3: 30 seconds
127	57	OPERATING_TIME_U5C_WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_DO_1.OPERATING_TIME_U5C_ ALARM - 1.0 h
128	58	OPERATING_TIME_U5C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_U5C_ WARNING + 1.0 h Max: 50000.0 h
129	59	OPERATING_TIME_120C_ WARNING	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: 1.0 h Max: TB_DO_1.OPERATING_TIME_120C_ ALARM - 1.0 h
130	60	OPERATING_TIME_120C_ALARM	Simple	FLOAT	S	4	R/W	C/a	15000.0 h	Min: TB_DO_1.OPERATING_TIME_120C_ WARNING + 1.0 h Max: 50000.0 h
131	61	ZEROPOINT_UPPER_ALARM_OPT	Simple	FLOAT	S	4	R/W	C/a	80.0 us	Min: TB_DO_1.ZEROPOINT_UPPER_WARNING_ OPT + 1.0 us Max: 1000.0 us
132	62	ZEROPOINT_UPPER_WARNING_ OPT	Simple	FLOAT	S	4	R/W	C/a	60.0 us	Min: TB_DO_1.ZEROPOINT_LOWER_WARNING _OPT + 1.0 us Max: TB_DO_1.ZEROPOINT_UPPER_ALARM_

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										OPT - 1.0 us
133	63	ZEROPOINT_LOWER_WARNING_OPT	Simple	FLOAT	S	4	R/W	C/a	40.0 us	Min: TB_DO_1.ZEROPOINT_LOWER_ALARM_OPT + 1.0 us Max: TB_DO_1.ZEROPOINT_UPPER_WARNING_OPT - 1.0 us
134	64	ZEROPOINT_LOWER_ALARM_OPT	Simple	FLOAT	S	4	R/W	C/a	30.0 us	Min: 0.0 us Max: TB_DO_1.ZEROPOINT_LOWER_WARNING_OPT - 1.0 us
135	65	ZEROPOINT_TAU	Simple	FLOAT	N	4	R	C/a	0.0 us	
136	66	SENSOR_CAL_ZERO_TAU	Simple	FLOAT	N	4	R	C/a	0.0 us	
137	67	PCS_TOLERANCE_WIDTH	Simple	FLOAT	S	4	R/W	C/a	2.0 hPa	Min: 0.01 hPa Max: 20.0 hPa
138	68	SENSOR_CAL_ZERO_COUNT	Simple	UNSIGNED16	N	2	R	C/a	0	
139	69	SENSOR_CAL_ZERO_METHOD	Simple	UNSIGNED16	N	2	R	C/a	0	Values: 0: None 1: Numeric input 2: 1 point 3: 2 point 4: Multipoint 5: table 6: Grab sample 7: Zero point 8: Air 100% rh 9: H2O air-saturated 10: Air variable 11: Zero point sample 12: Slope sample 13: Offset 14: Slope 15: with temp. comp. 16: without temp. comp. 17: Standard

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										18: Numeric input 19: Numeric input zero point 20: Numeric input 2-point 21: Factory 22: Test gas calibration 23: Value acquisition 24: Numeric input 3-point
140	70	SENSOR_CAL_ZERO_SERIAL	Simple	VISIBLE_STRING_32	N	32	R	C/a		
141	71	MAIN_VALUE_FORMAT	Simple	UNSIGNED16	S	2	R/W	C/a	0x112	Values: 0x110: xxxxx 0x111: xxx.x 0x112: xx.xx 0x113: x.xxx
142	72	MAIN_VALUE_FORMAT_CURRENT	Simple	UNSIGNED16	S	2	R/W	C/a	0x112	Values: 0x110: xxxxx 0x111: xxx.x 0x112: xx.xx 0x113: x.xxx
143	73	MAIN_VALUE_FORMAT_PRESSURE	Simple	UNSIGNED16	S	2	R/W	C/a	0x111	Values: 0x110: xxxxx 0x111: xxx.x 0x112: xx.xx 0x113: x.xxx
144	74	MAIN_VALUE_FORMAT_SATURATION	Simple	UNSIGNED16	S	2	R/W	C/a	0x112	Values: 0x110: xxxxx 0x111: xxx.x 0x112: xx.xx 0x113: x.xxx
145	75	MAIN_VALUE_FORMAT_CONCENTRATIONLIQUID	Simple	UNSIGNED16	S	2	R/W	C/a	0x112	Values: 0x110: xxxxx 0x111: xxx.x 0x112: xx.xx 0x113: x.xxx

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
146	76	MAIN_VALUE_FORMAT_ CONCENTRATIONGAS	Simple	UNSIGNED16	S	2	R/W	C/a	0x112	Values: 0x110: xxxxx 0x111: xxx.x 0x112: xx.xx 0x113: x.xxx
147	77	MAIN_VALUE_FORMAT_TAU	Simple	UNSIGNED16	S	2	R/W	C/a	0x111	Values: 0x110: xxxxx 0x111: xxx.x 0x112: xx.xx 0x113: x.xxx
148	78	SENSOR_LED_MEAS_FILTER	Simple	UNSIGNED16	S	2	R/W	C/a	2	Values: 0: off 1: low 2: medium 3: high 4: very high
149	79	LIMIT_SWITCH_DIGITAL_CAP_OP_ TIME_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_ OP_TIME_LIMIT_WARNING + 1.0 h Max: 50000.0 h
150	80	LIMIT_SWITCH_DIGITAL_CAP_OP_ TIME_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	5000.0 h	Min: 1.0 h Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_ OP_TIME_LIMIT_ALARM - 1.0 h
151	81	LIMIT_SWITCH_DIGITAL_CAP_OP_ TIME_T1_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	10000.0 h	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_ OP_TIME_T1_LIMIT_WARNING + 1.0 h Max: 50000.0 h
152	82	LIMIT_SWITCH_DIGITAL_CAP_OP_ TIME_T1_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	5000.0 h	Min: 1.0 h Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_ OP_TIME_T1_LIMIT_ALARM - 1.0 h

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
153	83	LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T2_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	694.444444444 h	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T2_LIMIT_WARNING + 1.0 h Max: 833.333333333 h
154	84	LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T2_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	555.555555556 h	Min: 1.0 h Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T2_LIMIT_ALARM - 1.0 h
155	85	LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T3_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	694.444444444 h	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T3_LIMIT_WARNING + 1.0 h Max: 833.333333333 h
156	86	LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T3_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	555.555555556 h	Min: 1.0 h Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T3_LIMIT_ALARM - 1.0 h
157	87	LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T4_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	694.444444444 h	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T4_LIMIT_WARNING + 1.0 h Max: 833.333333333 h
158	88	LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T4_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	555.555555556 h	Min: 1.0 h Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_OP_TIME_T4_LIMIT_ALARM - 1.0 h
159	89	LIMIT_SWITCH_DIGITAL_CAP_STERILISATION_CNT_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	100.0	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_STERILISATION_CNT_LIMIT_WARNING + 1.0 Max: 300.0
160	90	LIMIT_SWITCH_DIGITAL_CAP_STERILISATION_CNT_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	75.0	Min: 1.0 Max:

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_ STERILISATION_CNT_LIMIT_ALARM - 1.0
161	91	LIMIT_SWITCH_CAL_QUALITY_ INDEX_ALARM	Simple	FLOAT	S	4	R/W	C/a	80.0 %	Min: 50.0 % Max: TB_DO_1.LIMIT_SWITCH_CAL_QUALITY_ INDEX_WARN - 1.0 %
162	92	LIMIT_SWITCH_CAL_QUALITY_ INDEX_WARN	Simple	FLOAT	S	4	R/W	C/a	85.0 %	Min: TB_DO_1.LIMIT_SWITCH_CAL_QUALITY_ INDEX_ALARM + 1.0 % Max: 100.0 %
163	93	CAL_CAP_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
164	94	NUMBER_CAP_CIP_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
165	95	LIMIT_SWITCH_DIGITAL_CAP_ CIP_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	100.0	Min: 1.0 Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_ CIP_LIMIT_ALARM - 1.0
166	96	LIMIT_SWITCH_DIGITAL_CAP_CIP_ LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	125.0	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_ CIP_LIMIT_WARNING + 1.0 Max: 300.0
167	97	NUMBER_CAP_AUTO_CLAV_ FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
168	98	LIMIT_SWITCH_DIGITAL_CAP_ AUTO_CLAV_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	75.0	Min: 1.0 Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
										AUTO_CLAV_LIMIT_ALARM - 1.0
169	99	LIMIT_SWITCH_DIGITAL_CAP_ AUTO_CLAV_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	100.0	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAP_ AUTO_CLAV_LIMIT_WARNING + 1.0 Max: 300.0
170	100	SENSOR_CAP_DATA_IDENTIFIER	Simple	VISIBLE_STRING_ 16	N	16	R	C/a		
171	101	FERMENTER_SCALING_FUNCTION	Simple	UNSIGNED8	S	1	R	C/a	0	
172	102	FERMENTER_SCALING	Simple	FLOAT	N	4	R	C/a	1.0	
173	103	LIMIT_SWITCH_DIGITAL_CAL_ CAP_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	6.0	Min: 1.0 Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAL_ CAP_LIMIT_ALARM - 1.0
174	104	LIMIT_SWITCH_DIGITAL_CAL_ CAP_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	75.0	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CAL_ CAP_LIMIT_WARNING + 1.0 Max: 1000.0
175	105	CAP_STERILISATION_COUNTER_ FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
176	106	SENSOR_DO_LATEST_CAL_SELECT	Simple	UNSIGNED16	N	2	R	C/a	0	Values: 0: Point at oxygen 1: Zero point
177	107	NUMBER_AUTO_CLAV_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
178	108	LIMIT_SWITCH_DIGITAL_AUTO_ CLAV_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	300.0	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_ AUTO_CLAV_LIMIT_WARNING + 1.0 Max: 600.0
179	109	LIMIT_SWITCH_DIGITAL_AUTO_	Simple	FLOAT	S	4	R/W	C/a	200.0	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
		CLAV_LIMIT_WARNING								Min: 1.0 Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_AUTO_CLAV_LIMIT_ALARM - 1.0
180	110	NUMBER_CIP_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
181	111	LIMIT_SWITCH_DIGITAL_CIP_LIMIT_WARNING	Simple	FLOAT	S	4	R/W	C/a	500.0	Min: 1.0 Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_CIP_LIMIT_ALARM - 1.0
182	112	LIMIT_SWITCH_DIGITAL_CIP_LIMIT_ALARM	Simple	FLOAT	S	4	R/W	C/a	800.0	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_CIP_LIMIT_WARNING + 1.0 Max: 1000.0
183	113	LIMIT_SWITCH_DIGITAL_STERILISATION_CNT_LIMIT_WARNING_DO	Simple	FLOAT	S	4	R/W	C/a	500.0	Min: 1.0 Max: TB_DO_1.LIMIT_SWITCH_DIGITAL_STERILISATION_CNT_LIMIT_ALARM_DO - 1.0
184	114	LIMIT_SWITCH_DIGITAL_STERILISATION_CNT_LIMIT_ALARM_DO	Simple	FLOAT	S	4	R/W	C/a	800.0	Min: TB_DO_1.LIMIT_SWITCH_DIGITAL_STERILISATION_CNT_LIMIT_WARNING_DO + 1.0 Max: 1000.0
185	115	CAL_POINT_AT_OXYGEN	Simple	UNSIGNED16	S	2	R/W	C/a	1	Values: 0: off 1: on
186	116	CAP_OPERATION_TIME_FUNCTION	Simple	UNSIGNED16	S	2	R/W	C/a	0	Values: 0: off 1: on
187	117	CURRENT_QUALITY_INDEX	Simple	FLOAT	N	4	R	C/a	100.0 %	
188	118	CURRENT_TAU_0	Simple	FLOAT	N	4	R	C/a	0.0 us	
189	119	CURRENT_KSV	Simple	FLOAT	N	4	R	C/a	0.0 1/MPa	

Index	Rel. index	Parameter name	Object type	Data type	Store	Size	Access	Parameter usage / Kind of transport	Default value	Description
190	120	TEMPERATURE_SENSOR	Simple	UNSIGNED16	N	2	R	C/a	1	Values: 0: none 1: Pt100/Pt1000
191	121	NUMBER_OF_CAL	Simple	UNSIGNED16	N	2	R	C/a	0	

9.6 Diagnostic codes

9.6.1 Liquiline pHORP

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
003	Temp. sensor failure	F	PB:DEVICE_DIAGNOSIS[11.0]	PB:DIAG_EVENT_SWITCH[0]
004	Scanning sensor	C	PB:DEVICE_DIAGNOSIS[11.1]	PB:DIAG_EVENT_SWITCH[1]
010	Sensor initialization	C	PB:DEVICE_DIAGNOSIS[11.2]	PB:DIAG_EVENT_SWITCH[2]
011	Sensor no communication	F	PB:DEVICE_DIAGNOSIS[11.3]	PB:DIAG_EVENT_SWITCH[3]
012	Sensor failure	F	PB:DEVICE_DIAGNOSIS[11.4]	PB:DIAG_EVENT_SWITCH[4]
013	Wrong sensor type	F	PB:DEVICE_DIAGNOSIS[11.5]	PB:DIAG_EVENT_SWITCH[5]
014	Invalid sensor data	C	PB:DEVICE_DIAGNOSIS[11.6]	PB:DIAG_EVENT_SWITCH[6]
100	Glass impedance alarm	F	PB:DEVICE_DIAGNOSIS[11.7]	PB:DIAG_EVENT_SWITCH[7]
101	Ref. impedance alarm	F	PB:DEVICE_DIAGNOSIS[12.0]	PB:DIAG_EVENT_SWITCH[8]
102	Glass imp. too low alarm	F	PB:DEVICE_DIAGNOSIS[12.1]	PB:DIAG_EVENT_SWITCH[9]
103	Ref. imp. too low alarm	F	PB:DEVICE_DIAGNOSIS[12.2]	PB:DIAG_EVENT_SWITCH[10]
104	Sensor supply bad	F	PB:DEVICE_DIAGNOSIS[12.3]	PB:DIAG_EVENT_SWITCH[11]
106	Glass impedance warning	M	PB:DEVICE_DIAGNOSIS[12.4]	PB:DIAG_EVENT_SWITCH[12]
107	Ref. impedance warning	M	PB:DEVICE_DIAGNOSIS[12.5]	PB:DIAG_EVENT_SWITCH[13]
111	Glass imp. too low warning	M	PB:DEVICE_DIAGNOSIS[12.6]	PB:DIAG_EVENT_SWITCH[14]
112	Ref. imp. too low warning	M	PB:DEVICE_DIAGNOSIS[12.7]	PB:DIAG_EVENT_SWITCH[15]
119	Temp offset upper limit	F	PB:DEVICE_DIAGNOSIS[13.0]	PB:DIAG_EVENT_SWITCH[16]
120	Temp offset lower limit	F	PB:DEVICE_DIAGNOSIS[13.1]	PB:DIAG_EVENT_SWITCH[17]
127	Invalid TAG group	F	PB:DEVICE_DIAGNOSIS[13.2]	PB:DIAG_EVENT_SWITCH[18]
128	Invalid TAG	F	PB:DEVICE_DIAGNOSIS[13.3]	PB:DIAG_EVENT_SWITCH[19]
129	Sensor change aborted	C	PB:DEVICE_DIAGNOSIS[13.4]	PB:DIAG_EVENT_SWITCH[20]
130	Calibration active	C	PB:DEVICE_DIAGNOSIS[13.5]	PB:DIAG_EVENT_SWITCH[21]
131	PV not stable	M	PB:DEVICE_DIAGNOSIS[13.6]	PB:DIAG_EVENT_SWITCH[22]
132	Temperature not stable	M	PB:DEVICE_DIAGNOSIS[13.7]	PB:DIAG_EVENT_SWITCH[23]
134	Zero pnt. too high alarm	M	PB:DEVICE_DIAGNOSIS[14.0]	PB:DIAG_EVENT_SWITCH[24]
135	Zero pnt. too high warning	M	PB:DEVICE_DIAGNOSIS[14.1]	PB:DIAG_EVENT_SWITCH[25]
136	Zero pnt. too low warning	M	PB:DEVICE_DIAGNOSIS[14.2]	PB:DIAG_EVENT_SWITCH[26]
137	Zero pnt. too low alarm	M	PB:DEVICE_DIAGNOSIS[14.3]	PB:DIAG_EVENT_SWITCH[27]
138	Slope too low alarm	M	PB:DEVICE_DIAGNOSIS[14.4]	PB:DIAG_EVENT_SWITCH[28]
139	Slope too low warning	M	PB:DEVICE_DIAGNOSIS[14.5]	PB:DIAG_EVENT_SWITCH[29]
140	Leakage current alarm	F	PB:DEVICE_DIAGNOSIS[14.6]	PB:DIAG_EVENT_SWITCH[30]
142	SCC electrode cond. bad	M	PB:DEVICE_DIAGNOSIS[14.7]	PB:DIAG_EVENT_SWITCH[31]
145	Leakage current warn	M	PB:DEVICE_DIAGNOSIS[15.0]	PB:DIAG_EVENT_SWITCH[32]
148	SCC electrode sufficient	M	PB:DEVICE_DIAGNOSIS[15.1]	PB:DIAG_EVENT_SWITCH[33]
153	Operating point too high alarm	M	PB:DEVICE_DIAGNOSIS[15.2]	PB:DIAG_EVENT_SWITCH[34]
154	Operating point too high warning	M	PB:DEVICE_DIAGNOSIS[15.3]	PB:DIAG_EVENT_SWITCH[35]
155	Operating point too low warning	M	PB:DEVICE_DIAGNOSIS[15.4]	PB:DIAG_EVENT_SWITCH[36]

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
156	Operating point too low alarm	M	PB:DEVICE_DIAGNOSIS[15.5]	PB:DIAG_EVENT_SWITCH[37]
172	Operating time alarm	M	PB:DEVICE_DIAGNOSIS[15.6]	PB:DIAG_EVENT_SWITCH[38]
173	Oper.time >80Â°C alarm	M	PB:DEVICE_DIAGNOSIS[15.7]	PB:DIAG_EVENT_SWITCH[39]
174	Oper.time >100Â°C alarm	M	PB:DEVICE_DIAGNOSIS[16.0]	PB:DIAG_EVENT_SWITCH[40]
175	Oper.time <-300mV alarm	M	PB:DEVICE_DIAGNOSIS[16.1]	PB:DIAG_EVENT_SWITCH[41]
176	Oper.time >300mV alarm	M	PB:DEVICE_DIAGNOSIS[16.2]	PB:DIAG_EVENT_SWITCH[42]
177	Delta slope alarm	M	PB:DEVICE_DIAGNOSIS[16.3]	PB:DIAG_EVENT_SWITCH[43]
178	Delta zero alarm	M	PB:DEVICE_DIAGNOSIS[16.4]	PB:DIAG_EVENT_SWITCH[44]
179	Delta oper.point alarm	M	PB:DEVICE_DIAGNOSIS[16.5]	PB:DIAG_EVENT_SWITCH[45]
180	Cal. expired alarm	M	PB:DEVICE_DIAGNOSIS[16.6]	PB:DIAG_EVENT_SWITCH[46]
181	SIP, CIP, autoclaving alarm	M	PB:DEVICE_DIAGNOSIS[16.7]	PB:DIAG_EVENT_SWITCH[47]
182	Operating time warning	M	PB:DEVICE_DIAGNOSIS[17.0]	PB:DIAG_EVENT_SWITCH_1[0]
183	Oper.time >80Â°C warn	M	PB:DEVICE_DIAGNOSIS[17.1]	PB:DIAG_EVENT_SWITCH_1[1]
184	Oper.time >100Â°C warn	M	PB:DEVICE_DIAGNOSIS[17.2]	PB:DIAG_EVENT_SWITCH_1[2]
185	Oper.time <-300mV warn	M	PB:DEVICE_DIAGNOSIS[17.3]	PB:DIAG_EVENT_SWITCH_1[3]
186	Oper.time >300mV warn	M	PB:DEVICE_DIAGNOSIS[17.4]	PB:DIAG_EVENT_SWITCH_1[4]
190	Cal. expired warning	M	PB:DEVICE_DIAGNOSIS[17.5]	PB:DIAG_EVENT_SWITCH_1[5]
191	SIP, CIP, autoclaving warning	M	PB:DEVICE_DIAGNOSIS[17.6]	PB:DIAG_EVENT_SWITCH_1[6]
203	Wrong transmitter type	F	PB:DEVICE_DIAGNOSIS[17.7]	PB:DIAG_EVENT_SWITCH_1[7]
215	Simulation active	C	PB:DEVICE_DIAGNOSIS[18.0]	PB:DIAG_EVENT_SWITCH_1[8]
218	Current output not available	F	PB:DEVICE_DIAGNOSIS[18.1]	PB:DIAG_EVENT_SWITCH_1[9]
219	Power supply bad	C	PB:DEVICE_DIAGNOSIS[18.2]	PB:DIAG_EVENT_SWITCH_1[10]
238	Delta slope warning	C	PB:DEVICE_DIAGNOSIS[18.3]	PB:DIAG_EVENT_SWITCH_1[11]
239	Delta zero warning	C	PB:DEVICE_DIAGNOSIS[18.4]	PB:DIAG_EVENT_SWITCH_1[12]
240	Delta oper.point warning	C	PB:DEVICE_DIAGNOSIS[18.5]	PB:DIAG_EVENT_SWITCH_1[13]
318	Glass imp. too high alarm	M	PB:DEVICE_DIAGNOSIS[18.6]	PB:DIAG_EVENT_SWITCH_1[14]
319	Ref. imp. too high alarm	M	PB:DEVICE_DIAGNOSIS[18.7]	PB:DIAG_EVENT_SWITCH_1[15]
320	Glass imp. too high warning	M	PB:DEVICE_DIAGNOSIS[19.0]	PB:DIAG_EVENT_SWITCH_1[16]
321	Ref. imp. too high warning	M	PB:DEVICE_DIAGNOSIS[19.1]	PB:DIAG_EVENT_SWITCH_1[17]
322	Meas. value out of range	S	PB:DEVICE_DIAGNOSIS[19.2]	PB:DIAG_EVENT_SWITCH_1[18]
380	Comm. module defect	F	PB:DEVICE_DIAGNOSIS[19.3]	PB:DIAG_EVENT_SWITCH_1[19]
381	Comm. module incomp	F	PB:DEVICE_DIAGNOSIS[19.4]	PB:DIAG_EVENT_SWITCH_1[20]
404	Lower limit current output	S	PB:DEVICE_DIAGNOSIS[19.5]	PB:DIAG_EVENT_SWITCH_1[21]
405	Upper limit current output	S	PB:DEVICE_DIAGNOSIS[19.6]	PB:DIAG_EVENT_SWITCH_1[22]
406	SETUP active	OK	PB:DEVICE_DIAGNOSIS[19.7]	PB:DIAG_EVENT_SWITCH_1[23]
407	Diag. active	OK	PB:DEVICE_DIAGNOSIS[20.0]	PB:DIAG_EVENT_SWITCH_1[24]
408	Calibration aborted	M	PB:DEVICE_DIAGNOSIS[20.1]	PB:DIAG_EVENT_SWITCH_1[25]
409	Sensor change	C	PB:DEVICE_DIAGNOSIS[20.2]	PB:DIAG_EVENT_SWITCH_1[26]
501	Device open	M	PB:DEVICE_DIAGNOSIS[20.3]	PB:DIAG_EVENT_SWITCH_1[27]
513	Device alarm	F	PB:DEVICE_DIAGNOSIS[20.4]	PB:DIAG_EVENT_SWITCH_1[28]
514	Device warning	M	PB:DEVICE_DIAGNOSIS[20.5]	PB:DIAG_EVENT_SWITCH_1[29]
530	Logbook: 20 % remain	S	PB:DEVICE_DIAGNOSIS[20.6]	PB:DIAG_EVENT_SWITCH_1[30]

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
531	Logbook: full	S	PB:DEVICE_DIAGNOSIS[20.7]	PB:DIAG_EVENT_SWITCH_1[31]
532	Calibration timer expired	M	PB:DEVICE_DIAGNOSIS[21.0]	PB:DIAG_EVENT_SWITCH_1[32]
770	Sensor deactivated	F	PB:DEVICE_DIAGNOSIS[21.7]	PB:DIAG_EVENT_SWITCH_1[39]
802	PCS Alarm	F	PB:DEVICE_DIAGNOSIS[21.1]	PB:DIAG_EVENT_SWITCH_1[33]
810	PV upper limit alarm	F	PB:DEVICE_DIAGNOSIS[21.2]	PB:DIAG_EVENT_SWITCH_1[34]
811	PV lower limit alarm	F	PB:DEVICE_DIAGNOSIS[21.3]	PB:DIAG_EVENT_SWITCH_1[35]
812	Temperature out of range	F	PB:DEVICE_DIAGNOSIS[21.4]	PB:DIAG_EVENT_SWITCH_1[36]
840	PV upper limit warning	M	PB:DEVICE_DIAGNOSIS[21.5]	PB:DIAG_EVENT_SWITCH_1[37]
841	PV lower limit warning	M	PB:DEVICE_DIAGNOSIS[21.6]	PB:DIAG_EVENT_SWITCH_1[38]

9.6.2 Liquiline Cond

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
003	Temp. sensor failure	F	PB:DEVICE_DIAGNOSIS[11.0]	PB:DIAG_EVENT_SWITCH[0]
004	Scanning sensor	C	PB:DEVICE_DIAGNOSIS[11.1]	PB:DIAG_EVENT_SWITCH[1]
010	Sensor initialization	C	PB:DEVICE_DIAGNOSIS[11.2]	PB:DIAG_EVENT_SWITCH[2]
011	Sensor no communication	F	PB:DEVICE_DIAGNOSIS[11.3]	PB:DIAG_EVENT_SWITCH[3]
012	Sensor failure	F	PB:DEVICE_DIAGNOSIS[11.4]	PB:DIAG_EVENT_SWITCH[4]
013	Wrong sensor type	F	PB:DEVICE_DIAGNOSIS[11.5]	PB:DIAG_EVENT_SWITCH[5]
014	Invalid sensor data	C	PB:DEVICE_DIAGNOSIS[11.6]	PB:DIAG_EVENT_SWITCH[6]
104	Sensor supply bad	F	PB:DEVICE_DIAGNOSIS[11.7]	PB:DIAG_EVENT_SWITCH[7]
119	Temp offset upper limit	F	PB:DEVICE_DIAGNOSIS[12.0]	PB:DIAG_EVENT_SWITCH[8]
120	Temp offset lower limit	F	PB:DEVICE_DIAGNOSIS[12.1]	PB:DIAG_EVENT_SWITCH[9]
127	Invalid TAG group	F	PB:DEVICE_DIAGNOSIS[12.2]	PB:DIAG_EVENT_SWITCH[10]
128	Invalid TAG	F	PB:DEVICE_DIAGNOSIS[12.3]	PB:DIAG_EVENT_SWITCH[11]
129	Sensor change aborted	C	PB:DEVICE_DIAGNOSIS[12.4]	PB:DIAG_EVENT_SWITCH[12]
130	Calibration active	C	PB:DEVICE_DIAGNOSIS[12.5]	PB:DIAG_EVENT_SWITCH[13]
131	PV not stable	M	PB:DEVICE_DIAGNOSIS[12.6]	PB:DIAG_EVENT_SWITCH[14]
132	Temperature not stable	M	PB:DEVICE_DIAGNOSIS[12.7]	PB:DIAG_EVENT_SWITCH[15]
133	Polarization warning	M	PB:DEVICE_DIAGNOSIS[13.0]	PB:DIAG_EVENT_SWITCH[16]
163	Oper.time >120Â°C alarm	M	PB:DEVICE_DIAGNOSIS[13.1]	PB:DIAG_EVENT_SWITCH[17]
164	Oper.time >140Â°C alarm	M	PB:DEVICE_DIAGNOSIS[13.2]	PB:DIAG_EVENT_SWITCH[18]
165	Oper.time >80Â°C <100 nS alarm	M	PB:DEVICE_DIAGNOSIS[13.3]	PB:DIAG_EVENT_SWITCH[19]
169	Oper.time >120Â°C warn	M	PB:DEVICE_DIAGNOSIS[13.4]	PB:DIAG_EVENT_SWITCH[20]
172	Operating time alarm	M	PB:DEVICE_DIAGNOSIS[13.5]	PB:DIAG_EVENT_SWITCH[21]
173	Oper.time >80Â°C alarm	M	PB:DEVICE_DIAGNOSIS[13.6]	PB:DIAG_EVENT_SWITCH[22]
174	Oper.time >100Â°C alarm	M	PB:DEVICE_DIAGNOSIS[13.7]	PB:DIAG_EVENT_SWITCH[23]
180	Cal. expired alarm	M	PB:DEVICE_DIAGNOSIS[14.0]	PB:DIAG_EVENT_SWITCH[24]
181	SIP, CIP, autoclaving alarm	M	PB:DEVICE_DIAGNOSIS[14.1]	PB:DIAG_EVENT_SWITCH[25]
182	Operating time warning	M	PB:DEVICE_DIAGNOSIS[14.2]	PB:DIAG_EVENT_SWITCH[26]
183	Oper.time >80Â°C warn	M	PB:DEVICE_DIAGNOSIS[14.3]	PB:DIAG_EVENT_SWITCH[27]
184	Oper.time >100Â°C warn	M	PB:DEVICE_DIAGNOSIS[14.4]	PB:DIAG_EVENT_SWITCH[28]
187	Oper.time >125Â°C warn	M	PB:DEVICE_DIAGNOSIS[14.5]	PB:DIAG_EVENT_SWITCH[29]
188	Oper.time >150Â°C warn	M	PB:DEVICE_DIAGNOSIS[14.6]	PB:DIAG_EVENT_SWITCH[30]
189	Oper.time <5Â°C warn	M	PB:DEVICE_DIAGNOSIS[14.7]	PB:DIAG_EVENT_SWITCH[31]
190	Cal. expired warning	M	PB:DEVICE_DIAGNOSIS[15.0]	PB:DIAG_EVENT_SWITCH[32]
191	SIP, CIP, autoclaving warning	M	PB:DEVICE_DIAGNOSIS[15.1]	PB:DIAG_EVENT_SWITCH[33]
194	Oper.time >140Â°C warn	M	PB:DEVICE_DIAGNOSIS[15.2]	PB:DIAG_EVENT_SWITCH[34]
195	Oper.time >80Â°C <100 nS warn	M	PB:DEVICE_DIAGNOSIS[15.3]	PB:DIAG_EVENT_SWITCH[35]
196	Oper.time >125Â°C alarm	M	PB:DEVICE_DIAGNOSIS[15.4]	PB:DIAG_EVENT_SWITCH[36]
197	Oper.time >150Â°C alarm	M	PB:DEVICE_DIAGNOSIS[15.5]	PB:DIAG_EVENT_SWITCH[37]
198	Oper.time <5Â°C alarm	M	PB:DEVICE_DIAGNOSIS[15.6]	PB:DIAG_EVENT_SWITCH[38]
203	Wrong transmitter type	F	PB:DEVICE_DIAGNOSIS[15.7]	PB:DIAG_EVENT_SWITCH[39]

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
215	Simulation active	C	PB:DEVICE_DIAGNOSIS[16.0]	PB:DIAG_EVENT_SWITCH[40]
218	Current output not available	F	PB:DEVICE_DIAGNOSIS[16.1]	PB:DIAG_EVENT_SWITCH[41]
219	Power supply bad	C	PB:DEVICE_DIAGNOSIS[16.2]	PB:DIAG_EVENT_SWITCH[42]
310	Temp. slope alarm	M	PB:DEVICE_DIAGNOSIS[16.3]	PB:DIAG_EVENT_SWITCH[43]
311	Temp. slope alarm	M	PB:DEVICE_DIAGNOSIS[16.4]	PB:DIAG_EVENT_SWITCH[44]
312	No cond. detected	S	PB:DEVICE_DIAGNOSIS[16.5]	PB:DIAG_EVENT_SWITCH[45]
313	Sensor coil current too high	F	PB:DEVICE_DIAGNOSIS[16.6]	PB:DIAG_EVENT_SWITCH[46]
314	Sensor coil current too low	F	PB:DEVICE_DIAGNOSIS[16.7]	PB:DIAG_EVENT_SWITCH[47]
315	Airset not calibrated	C	PB:DEVICE_DIAGNOSIS[17.0]	PB:DIAG_EVENT_SWITCH_1[0]
316	Cell const. not calibrated	OK	PB:DEVICE_DIAGNOSIS[17.1]	PB:DIAG_EVENT_SWITCH_1[1]
317	Temp. not calibrated	OK	PB:DEVICE_DIAGNOSIS[17.2]	PB:DIAG_EVENT_SWITCH_1[2]
322	Meas. value out of range	S	PB:DEVICE_DIAGNOSIS[17.3]	PB:DIAG_EVENT_SWITCH_1[3]
325	Sensor value out of range	S	PB:DEVICE_DIAGNOSIS[17.4]	PB:DIAG_EVENT_SWITCH_1[4]
326	Internal sensor conn. broken	F	PB:DEVICE_DIAGNOSIS[21.7]	PB:DIAG_EVENT_SWITCH_1[39]
380	Comm. module defect	F	PB:DEVICE_DIAGNOSIS[17.5]	PB:DIAG_EVENT_SWITCH_1[5]
381	Comm. module incomp	F	PB:DEVICE_DIAGNOSIS[17.6]	PB:DIAG_EVENT_SWITCH_1[6]
404	Lower limit current output	S	PB:DEVICE_DIAGNOSIS[17.7]	PB:DIAG_EVENT_SWITCH_1[7]
405	Upper limit current output	S	PB:DEVICE_DIAGNOSIS[18.0]	PB:DIAG_EVENT_SWITCH_1[8]
406	SETUP active	OK	PB:DEVICE_DIAGNOSIS[18.1]	PB:DIAG_EVENT_SWITCH_1[9]
407	Diag. active	OK	PB:DEVICE_DIAGNOSIS[18.2]	PB:DIAG_EVENT_SWITCH_1[10]
408	Calibration aborted	M	PB:DEVICE_DIAGNOSIS[18.3]	PB:DIAG_EVENT_SWITCH_1[11]
409	Sensor change	C	PB:DEVICE_DIAGNOSIS[18.4]	PB:DIAG_EVENT_SWITCH_1[12]
501	Device open	M	PB:DEVICE_DIAGNOSIS[18.5]	PB:DIAG_EVENT_SWITCH_1[13]
513	Device alarm	F	PB:DEVICE_DIAGNOSIS[18.6]	PB:DIAG_EVENT_SWITCH_1[14]
514	Device warning	M	PB:DEVICE_DIAGNOSIS[18.7]	PB:DIAG_EVENT_SWITCH_1[15]
530	Logbook: 20 % remain	S	PB:DEVICE_DIAGNOSIS[19.0]	PB:DIAG_EVENT_SWITCH_1[16]
531	Logbook: full	S	PB:DEVICE_DIAGNOSIS[19.1]	PB:DIAG_EVENT_SWITCH_1[17]
532	Calibration timer expired	M	PB:DEVICE_DIAGNOSIS[19.2]	PB:DIAG_EVENT_SWITCH_1[18]
802	PCS Alarm	F	PB:DEVICE_DIAGNOSIS[22.0]	PB:DIAG_EVENT_SWITCH_1[40]
810	PV upper limit alarm	F	PB:DEVICE_DIAGNOSIS[19.3]	PB:DIAG_EVENT_SWITCH_1[19]
811	PV lower limit alarm	F	PB:DEVICE_DIAGNOSIS[19.4]	PB:DIAG_EVENT_SWITCH_1[20]
812	Temperature out of range	F	PB:DEVICE_DIAGNOSIS[19.5]	PB:DIAG_EVENT_SWITCH_1[21]
813	Sensor temperature out of range	F	PB:DEVICE_DIAGNOSIS[19.6]	PB:DIAG_EVENT_SWITCH_1[22]
814	USP alarm	F	PB:DEVICE_DIAGNOSIS[19.7]	PB:DIAG_EVENT_SWITCH_1[23]
840	PV upper limit warning	M	PB:DEVICE_DIAGNOSIS[20.0]	PB:DIAG_EVENT_SWITCH_1[24]
841	PV lower limit warning	M	PB:DEVICE_DIAGNOSIS[20.1]	PB:DIAG_EVENT_SWITCH_1[25]
844	USP warning	M	PB:DEVICE_DIAGNOSIS[20.2]	PB:DIAG_EVENT_SWITCH_1[26]
950	Conc. temp lower limit	M	PB:DEVICE_DIAGNOSIS[20.3]	PB:DIAG_EVENT_SWITCH_1[27]
951	Conc. temp upper limit	M	PB:DEVICE_DIAGNOSIS[20.4]	PB:DIAG_EVENT_SWITCH_1[28]
952	Conc. kappa lower limit	M	PB:DEVICE_DIAGNOSIS[20.5]	PB:DIAG_EVENT_SWITCH_1[29]
953	Conc. kappa upper limit	M	PB:DEVICE_DIAGNOSIS[20.6]	PB:DIAG_EVENT_SWITCH_1[30]
954	Conc. lower limit	M	PB:DEVICE_DIAGNOSIS[20.7]	PB:DIAG_EVENT_SWITCH_1[31]

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
955	Conc. upper limit	M	PB:DEVICE_DIAGNOSIS[21.0]	PB:DIAG_EVENT_SWITCH_1[32]
956	Cond temp lower limit	M	PB:DEVICE_DIAGNOSIS[21.1]	PB:DIAG_EVENT_SWITCH_1[33]
957	Cond temp upper limit	M	PB:DEVICE_DIAGNOSIS[21.2]	PB:DIAG_EVENT_SWITCH_1[34]
958	Cond kappa lower limit	M	PB:DEVICE_DIAGNOSIS[21.3]	PB:DIAG_EVENT_SWITCH_1[35]
959	Cond kappa upper limit	M	PB:DEVICE_DIAGNOSIS[21.4]	PB:DIAG_EVENT_SWITCH_1[36]
960	Cond kappa comp lower limit	M	PB:DEVICE_DIAGNOSIS[21.5]	PB:DIAG_EVENT_SWITCH_1[37]
961	Cond kappa comp upper limit	M	PB:DEVICE_DIAGNOSIS[21.6]	PB:DIAG_EVENT_SWITCH_1[38]

9.6.3 Liquiline Oxygen

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
003	Temp. sensor failure	F	PB:DEVICE_DIAGNOSIS[11.0]	PB:DIAG_EVENT_SWITCH[0]
004	Scanning sensor	C	PB:DEVICE_DIAGNOSIS[11.1]	PB:DIAG_EVENT_SWITCH[1]
010	Sensor initialization	C	PB:DEVICE_DIAGNOSIS[11.2]	PB:DIAG_EVENT_SWITCH[2]
011	Sensor no communication	F	PB:DEVICE_DIAGNOSIS[11.3]	PB:DIAG_EVENT_SWITCH[3]
012	Sensor failure	F	PB:DEVICE_DIAGNOSIS[11.4]	PB:DIAG_EVENT_SWITCH[4]
013	Wrong sensor type	F	PB:DEVICE_DIAGNOSIS[11.5]	PB:DIAG_EVENT_SWITCH[5]
014	Invalid sensor data	C	PB:DEVICE_DIAGNOSIS[11.6]	PB:DIAG_EVENT_SWITCH[6]
104	Sensor supply bad	F	PB:DEVICE_DIAGNOSIS[11.7]	PB:DIAG_EVENT_SWITCH[7]
119	Temp offset upper limit	F	PB:DEVICE_DIAGNOSIS[12.0]	PB:DIAG_EVENT_SWITCH[8]
120	Temp offset lower limit	F	PB:DEVICE_DIAGNOSIS[12.1]	PB:DIAG_EVENT_SWITCH[9]
127	Invalid TAG group	F	PB:DEVICE_DIAGNOSIS[12.2]	PB:DIAG_EVENT_SWITCH[10]
128	Invalid TAG	F	PB:DEVICE_DIAGNOSIS[12.3]	PB:DIAG_EVENT_SWITCH[11]
129	Sensor change aborted	C	PB:DEVICE_DIAGNOSIS[12.4]	PB:DIAG_EVENT_SWITCH[12]
130	Calibration active	C	PB:DEVICE_DIAGNOSIS[12.5]	PB:DIAG_EVENT_SWITCH[13]
131	PV not stable	M	PB:DEVICE_DIAGNOSIS[12.6]	PB:DIAG_EVENT_SWITCH[14]
132	Temperature not stable	M	PB:DEVICE_DIAGNOSIS[12.7]	PB:DIAG_EVENT_SWITCH[15]
134	Zero pnt. too high alarm	M	PB:DEVICE_DIAGNOSIS[13.0]	PB:DIAG_EVENT_SWITCH[16]
135	Zero pnt. too high warning	M	PB:DEVICE_DIAGNOSIS[13.1]	PB:DIAG_EVENT_SWITCH[17]
136	Zero pnt. too low warning	M	PB:DEVICE_DIAGNOSIS[13.2]	PB:DIAG_EVENT_SWITCH[18]
137	Zero pnt. too low alarm	M	PB:DEVICE_DIAGNOSIS[13.3]	PB:DIAG_EVENT_SWITCH[19]
138	Slope too low alarm	M	PB:DEVICE_DIAGNOSIS[13.4]	PB:DIAG_EVENT_SWITCH[20]
139	Slope too low warning	M	PB:DEVICE_DIAGNOSIS[13.5]	PB:DIAG_EVENT_SWITCH[21]
140	Leakage current alarm	F	PB:DEVICE_DIAGNOSIS[13.6]	PB:DIAG_EVENT_SWITCH[22]
143	Slope too high alarm	M	PB:DEVICE_DIAGNOSIS[13.7]	PB:DIAG_EVENT_SWITCH[23]
144	Slope too high warning	M	PB:DEVICE_DIAGNOSIS[14.0]	PB:DIAG_EVENT_SWITCH[24]
145	Leakage current warn	M	PB:DEVICE_DIAGNOSIS[14.1]	PB:DIAG_EVENT_SWITCH[25]
162	Oper.time >40Â°C alarm	M	PB:DEVICE_DIAGNOSIS[14.2]	PB:DIAG_EVENT_SWITCH[26]
163	Oper.time >120Â°C alarm	M	PB:DEVICE_DIAGNOSIS[20.7]	PB:DIAG_EVENT_SWITCH_1[31]
166	Oper.time >15nA alarm	M	PB:DEVICE_DIAGNOSIS[14.3]	PB:DIAG_EVENT_SWITCH[27]
167	Oper.time >50nA alarm	M	PB:DEVICE_DIAGNOSIS[14.4]	PB:DIAG_EVENT_SWITCH[28]
168	Oper.time >40Â°C warn	M	PB:DEVICE_DIAGNOSIS[14.5]	PB:DIAG_EVENT_SWITCH[29]
169	Oper.time >120Â°C warn	M	PB:DEVICE_DIAGNOSIS[21.0]	PB:DIAG_EVENT_SWITCH_1[32]
170	Cap operating time alarm	M	PB:DEVICE_DIAGNOSIS[21.4]	PB:DIAG_EVENT_SWITCH_1[36]
171	Cap operating time warning	M	PB:DEVICE_DIAGNOSIS[21.5]	PB:DIAG_EVENT_SWITCH_1[37]
172	Operating time alarm	M	PB:DEVICE_DIAGNOSIS[14.6]	PB:DIAG_EVENT_SWITCH[30]
173	Oper.time >80Â°C alarm	M	PB:DEVICE_DIAGNOSIS[14.7]	PB:DIAG_EVENT_SWITCH[31]
180	Cal. expired alarm	M	PB:DEVICE_DIAGNOSIS[15.0]	PB:DIAG_EVENT_SWITCH[32]
181	SIP, CIP, autoclaving alarm	M	PB:DEVICE_DIAGNOSIS[15.1]	PB:DIAG_EVENT_SWITCH[33]
182	Operating time warning	M	PB:DEVICE_DIAGNOSIS[15.2]	PB:DIAG_EVENT_SWITCH[34]
183	Oper.time >80Â°C warn	M	PB:DEVICE_DIAGNOSIS[15.3]	PB:DIAG_EVENT_SWITCH[35]
189	Oper.time <5Â°C warn	M	PB:DEVICE_DIAGNOSIS[21.1]	PB:DIAG_EVENT_SWITCH_1[33]

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
190	Cal. expired warning	M	PB:DEVICE_DIAGNOSIS[15.4]	PB:DIAG_EVENT_SWITCH[36]
191	SIP, CIP, autoclaving warning	M	PB:DEVICE_DIAGNOSIS[15.5]	PB:DIAG_EVENT_SWITCH[37]
192	Oper.time >15nA warn	M	PB:DEVICE_DIAGNOSIS[15.6]	PB:DIAG_EVENT_SWITCH[38]
193	Oper.time >50nA warn	M	PB:DEVICE_DIAGNOSIS[15.7]	PB:DIAG_EVENT_SWITCH[39]
198	Oper.time <5Â°C alarm	M	PB:DEVICE_DIAGNOSIS[21.2]	PB:DIAG_EVENT_SWITCH_1[34]
203	Wrong transmitter type	F	PB:DEVICE_DIAGNOSIS[16.0]	PB:DIAG_EVENT_SWITCH[40]
215	Simulation active	C	PB:DEVICE_DIAGNOSIS[16.1]	PB:DIAG_EVENT_SWITCH[41]
218	Current output not available	F	PB:DEVICE_DIAGNOSIS[16.2]	PB:DIAG_EVENT_SWITCH[42]
219	Power supply bad	C	PB:DEVICE_DIAGNOSIS[16.3]	PB:DIAG_EVENT_SWITCH[43]
222	Oper.time >160nA warn	M	PB:DEVICE_DIAGNOSIS[16.4]	PB:DIAG_EVENT_SWITCH[44]
223	Oper.time >160nA alarm	M	PB:DEVICE_DIAGNOSIS[16.5]	PB:DIAG_EVENT_SWITCH[45]
224	Oper.time >5Â°C warn	M	PB:DEVICE_DIAGNOSIS[16.6]	PB:DIAG_EVENT_SWITCH[46]
225	Oper.time >5Â°C alarm	M	PB:DEVICE_DIAGNOSIS[16.7]	PB:DIAG_EVENT_SWITCH[47]
226	Oper.time >30Â°C warn	M	PB:DEVICE_DIAGNOSIS[17.0]	PB:DIAG_EVENT_SWITCH_1[0]
227	Oper.time >30Â°C alarm	M	PB:DEVICE_DIAGNOSIS[17.1]	PB:DIAG_EVENT_SWITCH_1[1]
228	Oper.time >30nA warn	M	PB:DEVICE_DIAGNOSIS[17.2]	PB:DIAG_EVENT_SWITCH_1[2]
229	Oper.time >30nA alarm	M	PB:DEVICE_DIAGNOSIS[17.3]	PB:DIAG_EVENT_SWITCH_1[3]
322	Meas. value out of range	S	PB:DEVICE_DIAGNOSIS[17.4]	PB:DIAG_EVENT_SWITCH_1[4]
327	Selftest active	F	PB:DEVICE_DIAGNOSIS[20.0]	PB:DIAG_EVENT_SWITCH_1[24]
328	Electr. temp.	M	PB:DEVICE_DIAGNOSIS[20.1]	PB:DIAG_EVENT_SWITCH_1[25]
329	Sensor low signal amplitude	M	PB:DEVICE_DIAGNOSIS[20.2]	PB:DIAG_EVENT_SWITCH_1[26]
330	Sensor relaxation time low	M	PB:DEVICE_DIAGNOSIS[20.3]	PB:DIAG_EVENT_SWITCH_1[27]
331	Sensor relaxation time high	M	PB:DEVICE_DIAGNOSIS[20.4]	PB:DIAG_EVENT_SWITCH_1[28]
332	Sensor low signal decay	F	PB:DEVICE_DIAGNOSIS[20.5]	PB:DIAG_EVENT_SWITCH_1[29]
333	Sensor temperature too high	S	PB:DEVICE_DIAGNOSIS[20.6]	PB:DIAG_EVENT_SWITCH_1[30]
380	Comm. module defect	F	PB:DEVICE_DIAGNOSIS[17.5]	PB:DIAG_EVENT_SWITCH_1[5]
381	Comm. module incomp	F	PB:DEVICE_DIAGNOSIS[17.6]	PB:DIAG_EVENT_SWITCH_1[6]
404	Lower limit current output	S	PB:DEVICE_DIAGNOSIS[17.7]	PB:DIAG_EVENT_SWITCH_1[7]
405	Upper limit current output	S	PB:DEVICE_DIAGNOSIS[18.0]	PB:DIAG_EVENT_SWITCH_1[8]
406	SETUP active	OK	PB:DEVICE_DIAGNOSIS[18.1]	PB:DIAG_EVENT_SWITCH_1[9]
407	Diag. active	OK	PB:DEVICE_DIAGNOSIS[18.2]	PB:DIAG_EVENT_SWITCH_1[10]
408	Calibration aborted	M	PB:DEVICE_DIAGNOSIS[18.3]	PB:DIAG_EVENT_SWITCH_1[11]
409	Sensor change	C	PB:DEVICE_DIAGNOSIS[18.4]	PB:DIAG_EVENT_SWITCH_1[12]
501	Device open	M	PB:DEVICE_DIAGNOSIS[18.5]	PB:DIAG_EVENT_SWITCH_1[13]
513	Device alarm	F	PB:DEVICE_DIAGNOSIS[18.6]	PB:DIAG_EVENT_SWITCH_1[14]
514	Device warning	M	PB:DEVICE_DIAGNOSIS[18.7]	PB:DIAG_EVENT_SWITCH_1[15]
530	Logbook: 20 % remain	S	PB:DEVICE_DIAGNOSIS[19.0]	PB:DIAG_EVENT_SWITCH_1[16]
531	Logbook: full	S	PB:DEVICE_DIAGNOSIS[19.1]	PB:DIAG_EVENT_SWITCH_1[17]
532	Calibration timer expired	M	PB:DEVICE_DIAGNOSIS[19.2]	PB:DIAG_EVENT_SWITCH_1[18]
802	PCS Alarm	F	PB:DEVICE_DIAGNOSIS[21.3]	PB:DIAG_EVENT_SWITCH_1[35]
810	PV upper limit alarm	F	PB:DEVICE_DIAGNOSIS[19.3]	PB:DIAG_EVENT_SWITCH_1[19]
811	PV lower limit alarm	F	PB:DEVICE_DIAGNOSIS[19.4]	PB:DIAG_EVENT_SWITCH_1[20]
812	Temperature out of range	F	PB:DEVICE_DIAGNOSIS[19.5]	PB:DIAG_EVENT_SWITCH_1[21]

Diag. Event	Name	NE107 class [default]	Mapped to PB_DEVICE_DIAGNOSIS [octet number.bit position]	Configured by PB_DIAG_EVENT_SWITCHx [byte index]
840	PV upper limit warning	M	PB:DEVICE_DIAGNOSIS[19.6]	PB:DIAG_EVENT_SWITCH_1[22]
841	PV lower limit warning	M	PB:DEVICE_DIAGNOSIS[19.7]	PB:DIAG_EVENT_SWITCH_1[23]
902	Cap SIP, CIP, autoclaving alm	M	PB:DEVICE_DIAGNOSIS[21.7]	PB:DIAG_EVENT_SWITCH_1[39]
903	Cap SIP, CIP, autoclaving warn	M	PB:DEVICE_DIAGNOSIS[21.6]	PB:DIAG_EVENT_SWITCH_1[38]
904	Calibration quality alarm	M	PB:DEVICE_DIAGNOSIS[22.1]	PB:DIAG_EVENT_SWITCH_1[41]
905	Calibration quality warning	M	PB:DEVICE_DIAGNOSIS[22.0]	PB:DIAG_EVENT_SWITCH_1[40]
906	Number of cap calibrations alarm	M	PB:DEVICE_DIAGNOSIS[22.2]	PB:DIAG_EVENT_SWITCH_1[42]
907	Number of cap calibrations warn	M	PB:DEVICE_DIAGNOSIS[22.3]	PB:DIAG_EVENT_SWITCH_1[43]
908	Reference calibration required	M	PB:DEVICE_DIAGNOSIS[22.4]	PB:DIAG_EVENT_SWITCH_1[44]

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