TeSys Active

TeSys Tera Motor Management System

PROFIBUS DP Communication Guide

TeSys offers innovative and connected solutions for motor starters.

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Legal Information

The information provided in this document contains general descriptions, technical characteristics and/or recommendations related to products/solutions.

This document is not intended as a substitute for a detailed study or operational and site-specific development or schematic plan. It is not to be used for determining suitability or reliability of the products/solutions for specific user applications. It is the duty of any such user to perform or have any professional expert of its choice (integrator, specifier or the like) perform the appropriate and comprehensive risk analysis, evaluation and testing of the products/solutions with respect to the relevant specific application or use thereof.

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Safety Information

Important Information

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, service, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

Please Note

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Document

Document Scope

This guide provides users, installers, and maintenance personnel with the technical information needed to operate the PROFIBUS DP protocol on the LTMT main unit.

This guide is intended for:

- Design engineers
- System integrators
- Maintenance engineers

Validity Note

This guide is valid for the following LTMT main units:

- LTMTPFM: LTMT main unit with PROFIBUS DP protocol, 100–240 Vac/Vdc
- LTMTPBD: LTMT main unit with PROFIBUS DP protocol, 24 Vdc

General Cybersecurity Information

In recent years, the growing number of networked machines and production plants has seen a corresponding increase in the potential for cyber threats, such as unauthorized access, data breaches, and operational disruptions. You must, therefore, consider all possible cybersecurity measures to help protect assets and systems against such threats.

To help keep your Schneider Electric products secure and protected, it is in your best interest to implement the cybersecurity best practices as described in the Cybersecurity Best Practices document.

Schneider Electric provides additional information and assistance:

- Subscribe to the Schneider Electric security newsletter.
- Visit the Cybersecurity Support Portal web page to:
  - Find Security Notifications.
  - Report vulnerabilities and incidents.
- Visit the Schneider Electric Cybersecurity and Data Protection Posture web page to:
  - Access the cybersecurity posture.
  - Learn more about cybersecurity in the cybersecurity academy.
  - Explore the cybersecurity services from Schneider Electric.

Environmental Data

For product compliance and environmental information, refer to the Schneider Electric Environmental Data Program.

Available Languages of the Document

The document is available in these languages:

- English

Related Documents

Title of documentation	Description	Reference number
TeSys Tera Motor Management System User Guide	This is the main user guide that introduces the complete TeSys Tera system. It describes the main functions of the LTMT main units, LTMTCT/LTMTCTV sensor modules, LTMT expansion units, and LTMTCUF control operator unit.	DOCA0257EN
TeSys Tera Motor Management System Installation Guide	This guide describes the installation, commissioning, and maintenance of the LTMT main unit, LTMTCT/LTMTCTV sensor modules, LTMT expansion units, and LTMTCUF control operator unit.	DOCA0356EN
TeSys Tera Motor Management System LTMTCUF control operator unit User Guide	This guide describes how to install, configure, and use the LTMTCUF control operator unit.	DOCA0233EN
TeSys Tera Motor Management System DTM library Online Help Guide	This guide describes the TeSys Tera DTM Library which allows the customization of the control functions of the TeSys Tera Motor Management System.	DOCA0275EN
TeSys Tera Motor Management System DTM library Software Release Notes	This document provides important information about the TeSys Tera DTM Library software and provides summary of new features and enhancement.	DOCA0279EN
TeSys Tera Motor Management System Firmware Release Notes	This guide provides important information about the TeSys Tera system firmware packages and provides summary of new features and enhancement.	DOCA0276EN
Electrical Installation Guide (wiki version)	The aim of the Electrical Installation Guide (and now wiki) is to help electrical designers and contractors to design electrical installations according to the standards such as the IEC 60364 or other relevant standards.	www.electrical-installation.org

To find documents online, visit the Schneider Electric download center (www.se.com/ww/en/download/).

Information on Non-Inclusive or Insensitive Terminology

As a responsible, inclusive company, Schneider Electric is constantly updating its communications and products that contain non-inclusive or insensitive terminology. However, despite these efforts, our content may still contain terms that are deemed inappropriate by some customers.

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Precautions

Read and understand the following precautions before performing any procedures in this guide.

⚠⚠DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH

- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying to this equipment before working on this equipment.
- Use only the specified voltage when operating this equipment and any associated products.
- Always use a properly rated voltage sensing device to confirm power is off.
- Use appropriate interlocks where personnel and/or equipment hazards exist.
- Power line circuits must be wired and protected in compliance with local and national regulatory requirements.
- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices per NFPA 70E, NOM-029-STPS, or CSA Z462 or local equivalent.

Failure to follow these instructions will result in death or serious injury.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not disassemble, repair, or modify this equipment. There are no user serviceable parts.
- Install and operate this equipment in an enclosure appropriately rated for its intended application environment.
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

California Proposition 65 Warning

⚠

WARNING: This product can expose you to chemicals such as, Humiseal 1A33 Polyurethane, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Qualified Personnel

Only appropriately trained personnel who are familiar with and understand the content of this guide and all other related product documentation are authorized to work on and with this product.

The qualified personnel must be able to detect possible hazards that may arise from modifying parameter values and generally from mechanical, electrical, or electronic equipment. The qualified personnel must be familiar with the standards, provisions, and regulations for the prevention of industrial accidents, which they must observe when designing and implementing the system.

The use and application of the information contained in this guide requires expertise in the design and programming of automated control systems. Only you,

the user, panel builder, or integrator, can be aware of all the conditions and factors present during installation, setup, operation, and maintenance of a process plant or machine, and can therefore determine the automation and associated equipment and the related safeties and interlocks which can be effectively and properly used when selecting automation and control equipment, and any other related equipment or software, for a particular application. You must also consider applicable local, regional, or national standards and/or regulations.

Pay particular attention to conformance with any safety information, electrical requirements, and normative standards that apply to your process plant or machine in the use of this equipment.

Intended Use

The products described in this guide, together with software, accessories, and options, are a part of starters for low-voltage electrical loads, intended for industrial use according to the instructions, directions, examples, and safety information contained in the present document and other supporting documentation.

The product may only be used in compliance with all applicable safety regulations and directives, the specified requirements, and the technical data.

Before using the product, you must perform a risk assessment of the planned application. Based on the results, appropriate safety-related measures must be implemented.

Since the product is used as a component of a process plant or machine, you must ensure the safety of personnel by means of the overall system design.

Operate the product only with the specified cables and accessories. Use only genuine accessories and spare parts.

Any use other than the use explicitly permitted is prohibited and can result in unanticipated hazards.

Introduction to TeSys Tera System and Protocol

What's in This Part

TeSys Master Range

TeSys is an innovative motor control and management solution from the global market leader. TeSys offers connected, efficient products and solutions for switching, and protection of motors and electrical loads in compliance with all major global electrical standards.

TeSys Tera System

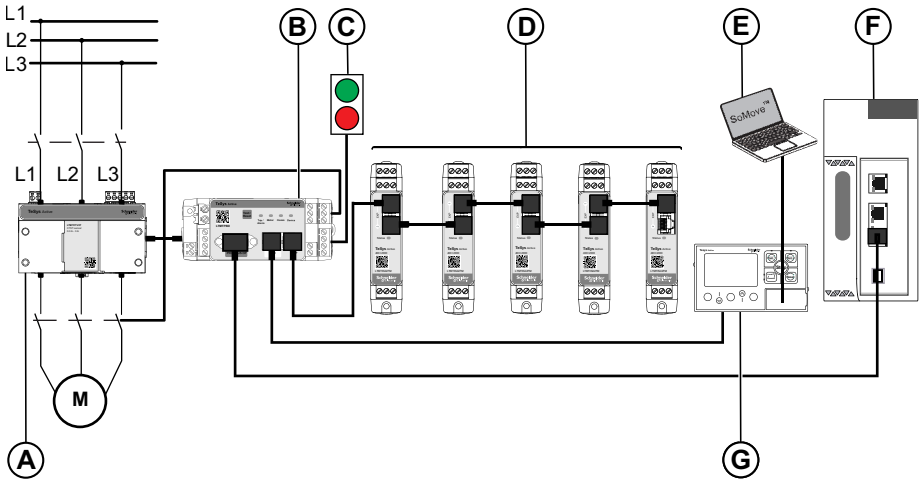
Overview

The TeSys Tera Motor Management System (or TeSys Tera system) is part of the TeSys™ Active range of intelligent relays and motor starters. The TeSys Tera system is designed as a reliable building block for Intelligent Motor Control Centres (iMCCs) to provide complete protection, control, and monitoring capabilities for single-phase or three-phase AC induction motors.

The TeSys Tera system is installed in the low voltage switchgear system and connects the higher level automation system via fieldbus network and the motor feeder.

TeSys Tera system:

- Covers conventional and advanced motor protection, metering, and monitoring in iMCC feeders into single, easy to configure, compact communicating module with a display.
- Provides protection controller for low voltage contactor-controlled motor starter feeders.
- Provides flexible and modular motor management system for motors with constant speeds in low voltage applications.



A LTMTCT/LTMTCTV sensor module

B LTMT main unit

C Start/Stop commands

D LTMT expansion units

E PC running the TeSys Tera DTM embedded in a FDT container, such as SoMove software

F Programmable Logic Controller (PLC) or Distributed Control System (DCS)

G LTMTCUF control operator unit

Functional Characteristics

The TeSys Tera system manages:

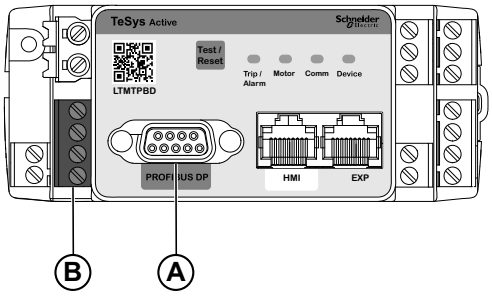
- Single-phase or three-phase AC induction motors up to 100 A with integral sensor module.
- Single-phase or three-phase AC induction motors up to 810 A when using external current transformers.
- The connection between the control system and the motor feeder, increases plant availability.

- Significant savings to the installation, commissioning, operation, and maintenance.
- Numerical microprocessor equipped controller that allows to set parameters of the motor according to the application and process requirements.

LTMT Main Unit with PROFIBUS DP Protocol

Description

The LTMT main unit with PROFIBUS Decentralized-Peripherals (DP) protocol is equipped with two PROFIBUS DP communication ports on the front face.



A Sub-D 9 connector for connection to the PROFIBUS DP network with baud rate up to 12 Mbps

B Terminal connector for connection to the PROFIBUS DP network with baud rate up to 1.5 Mbps

Both the ports are electrically identical. They follow the PROFIBUS DP interoperability standards. It is recommended to use the sub-D 9 connector for communication.

IMPORTANT: The LTMT main unit with PROFIBUS DP protocol must be connected through only one port.

Port Settings

The PROFIBUS DP ports have the following configurable settings:

Setting	Setting range	Default setting
Node address	1–125 in step of 1	126
Product profile	TeSys Tera	TeSys Tera
Endianness	• Big-endian • Little-endian	Big-endian

The PROFIBUS DP port settings can be configured using the following interfaces:

- A PC running the TeSys Tera DTM embedded in a FDT container, such as SoMove software.
- The LTMTCUF control operator unit.

NOTE: The node address can be set by using PLC or DCS via the communication network.

Node Address

The node address is the address of the LTMT main unit on the PROFIBUS DP bus. You can assign an address from 1 to 125. The factory setting for the address is 126.

You must set the node address before any communication can begin.

NOTE: Address 0 is an invalid value and is not permitted. Return to the factory settings command or clear network setting that sets the node address to the invalid value 126.

Communication Loss Function

Communication loss function detects the loss of communication between the LTMT main unit and the PLC or DCS connected via the communication network, once communication has been established. For more information, refer to Communication Loss section in *TeSys Tera Motor Management System User Guide – DOCA0257EN*.

Endianness

Endianness is the order in which bytes within a word of digital data are transmitted through a data communication medium. Endianness is represented in two ways:

- Big Endian:

  A big-endian system stores the most significant byte at the smallest memory address and the least significant byte at the largest memory address.

- Little Endian:

  A little-endian system stores the most significant byte at the largest memory address and the least significant byte at the smallest memory address.

Wiring Information

What's in This Part

Overview

This section describes how to connect the LTMT main unit to an RS 485 PROFIBUS DP network with a sub-D 9 or an open-style connector.

⚠WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are forced stop.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of anticipated transmission delays or failures of the link.
- Each implementation of an LTMT main unit must be individually and thoroughly tested for proper operation before being placed into service.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: For additional information, refer to NEMA ICS 1.1 (latest edition), Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control.

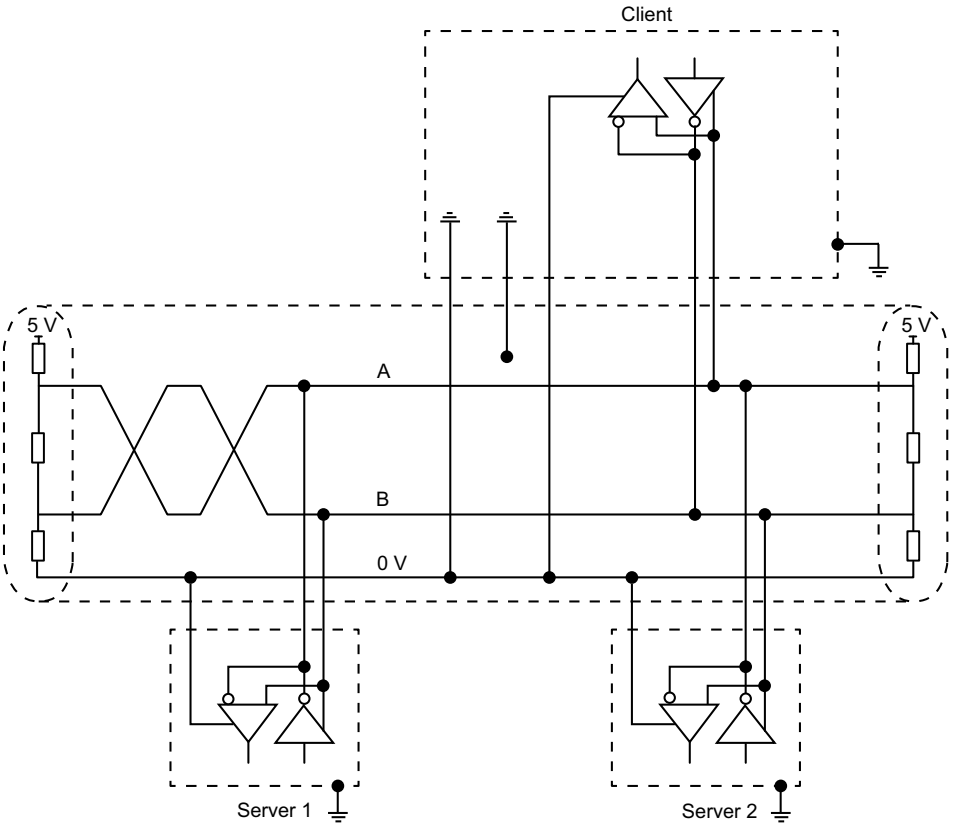
PROFIBUS DP Network Characteristics

Overview

This section describes the characteristics of the PROFIBUS DP network over serial communication line. The PROFIBUS DP complies with the PROFIBUS DP protocol standard specification. For information on the specification and installation guidelines, refer to PROFIBUS Installation Guidelines published on www.profibus.com.

Standard Diagram

The simplified diagram of the PROFIBUS DP standard specification is as follows:



Characteristics for Connection to PROFIBUS DP RS 485 Bus

The RS 485 standard allows variants with characteristic like:

- Polarization
- Line terminator
- Number of servers
- Bus length

The RS 485 bus connection characteristics are as follows:

Characteristics	Value
Topology	Linear bus with line terminations
Transmission mode	Half duplex
Baud rate	• Open style 4-terminal connector up to 1.5 Mbps • Sub-D 9 connector up to 12 Mbps
Possible transmission media	Twisted-pair cable (standard version, type RS 485)
Maximum number of servers connected to one client	128 (0, 126, and 127 are reserved)
Maximum number of servers per derivation	32
Maximum number of repeaters per bus	Nine maximum repeaters including five maximum repeaters cascaded in one derivation
Line terminator	Active termination

Use of Repeaters

NOTICE

COMMUNICATION LOSS HAZARD

Use a repeater to:

- Connect more than 32 PROFIBUS DP servers on the bus.
- Extend the bus cable length.

Failure to follow these instructions can result in equipment damage.

A PROFIBUS DP network bus can be segmented with repeaters for many reasons:

- Maximum length is reached when all the sub connection cable length is added in a segment.
- To connect more than 32 PROFIBUS DP servers on the bus.
- To isolate the derivation.
- For derivation.
- Connection to equipment.

For more information about the topology with a repeater, refer to the *PROFIBUS Installation Guidelines*.

Maximum Bus Cable Length

The bus cable length and corresponding baud rates are as follows:

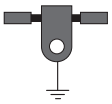
Maximum bus cable length per segment	Maximum bus cable length with three repeaters	Baud rates
1,200 m (3,936 ft)	4,800 m (15,748 ft)	9.6/19.2/45.45/93.75 kbps
1,000 m (3,280 ft)	4,000 m (13,123 ft)	187.5 kbps
500 m (1,640 ft)	2,000 m (6,561 ft)	500 kbps
200 m (656 ft)	800 m (2,624 ft)	1.5 Mbps
100 m (328 ft)	400 m (1,312 ft)	3/6/12 Mbps

Wiring Rules

NOTICE
COMMUNICATION MALFUNCTION Respect all the wiring and grounding rules in order to avoid communication malfunctions due to EMC disturbance. **Failure to follow these instructions can result in equipment damage.**

The following wiring rules must be followed in order to reduce disturbance due to EMC on the behavior of the LTMT main unit:

- Keep a distance as large as possible between the communication cable and the power or control cables (minimum 30 cm or 11.8 in.).
- Cross over the PROFIBUS DP cable and the power cables at right angles, if necessary.
- Install the communication cables as close as possible to the grounded plate.
- Do not bend or damage the cables. The maximum bending radius is 10 times the cable diameter.
- Avoid sharp angles of paths or passage of the cable.
- Use the recommended cables only. For more information, refer to Cables section in *TeSys Tera Motor Management System User Guide – DOCA0257EN*.
- A PROFIBUS DP cable must be shielded twisted pair cable:
  - The twisted pair cable shield must be connected to a protective ground.
  - The connection of the twisted pair cable shield to the protective ground must be as short as possible.
  - Connect together all the shields, if necessary.
  - Connect the shield to the ⏚ terminal.
  - Perform the grounding of the shield with a metal clip.



- When the LTMT main unit is installed in a withdrawable drawer:
  - Connect together all the shield contacts of the withdrawable drawer part of the auxiliary connector to the ground, to create an electromagnetic barrier.
  - Do not connect the cable shield at the fixed part of the auxiliary connector.
- Place a line terminator at each end of the bus to avoid malfunctions on the communication bus.
- Wire the bus between each connector directly, without intermediate terminal blocks.
- The common polarity (0 V) must be connected directly to protective ground, preferably at one point only for the entire bus. In general, this point is chosen either on the master device or on the polarization device.

For more information, refer to *Electrical Installation Guide* (available in English only).

Wiring Diagram of LTMT Main Units Connected with Sub-D 9 Connector

Precautions

Always follow the recommendations for wiring and connection.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

This equipment must be installed, programmed, and serviced only by qualified personnel.

- Follow all up-to-date instructions, standards and regulations.
- Check the function settings before starting the motor.
- Do not downgrade or modify these devices.

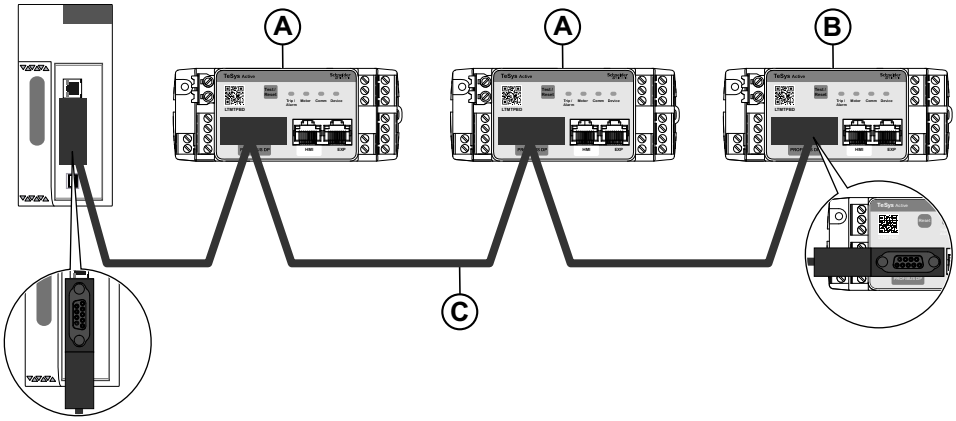
Incorrect configuration can result in unpredictable behavior of the devices.

Respect all the wiring and grounding rules in order to avoid communication malfunctions due to EMC disturbance.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

LTMT Main Units Connected with Sub-D 9 Connector

The wiring diagram for the connection of LTMT main units to the RS 485 bus via the sub-D 9 connector is as follows:

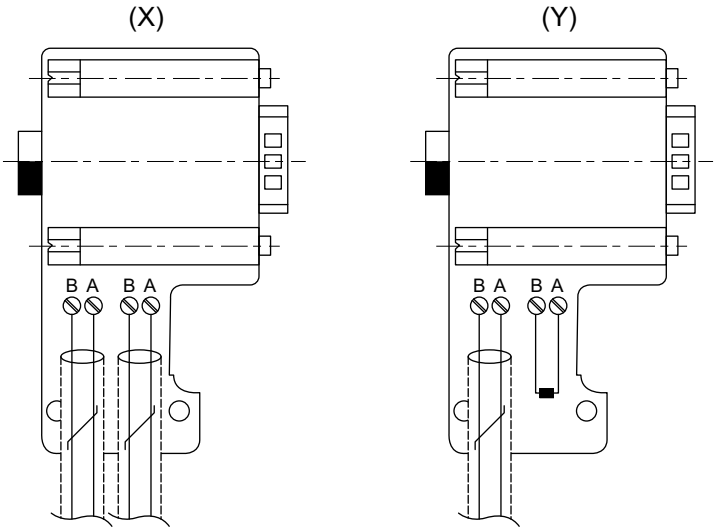


A PROFIBUS DP sub-D 9 in-line connector or PROFIBUS DP sub-D 9 in-line connector with programming port

B PROFIBUS DP sub-D 9 connector with terminator

C TSXPBSCA•00 PROFIBUS DP shielded cable

PROFIBUS DP Sub-D 9 Connector Accessories

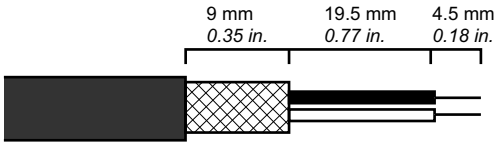


X PROFIBUS DP sub-D 9 in-line connector or PROFIBUS DP sub-D 9 in-line connector with programming port

Y PROFIBUS DP sub-D 9 connector with terminator

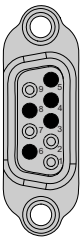
Sub-D 9 Connector Accessory Wiring Procedure

1. Strip a length of 33 mm (1.3 in.) from the end of the PROFIBUS DP TSXPBSCA•00 cable.
2. Cut a length of 24 mm (0.95 in.) from the metallic braid and the shielding films, leaving a length of 9 mm (0.35 in.).
3. Strip a section of 4.5 mm (0.18 in.) in length from end of each wire.



4. Open the PROFIBUS DP sub-D 9 connector.
5. Screw the PROFIBUS DP cable to the A and B terminals. On sub-D 9 in-line connector, screw the second PROFIBUS DP cable to the A and B terminals.
6. Close the PROFIBUS DP sub-D 9 connector.

Sub-D 9 Connector Pin Assignment



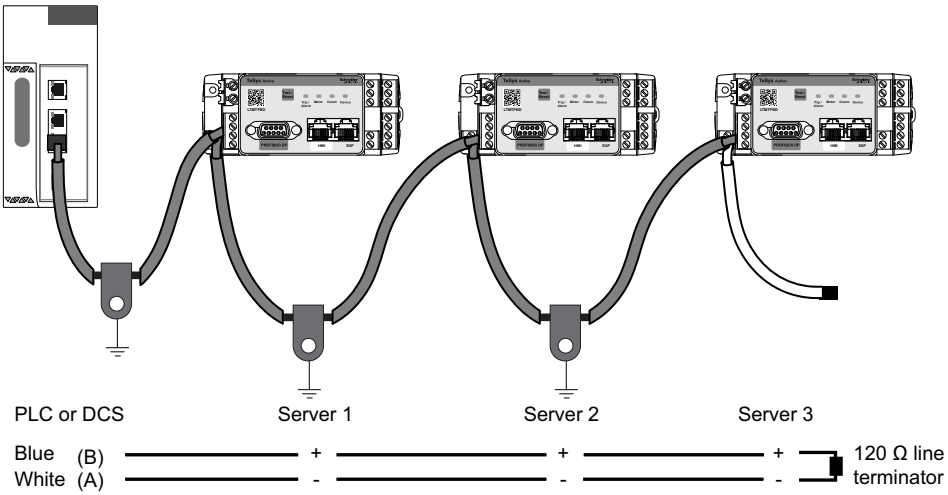
Pin number	Signal	Description
1	Shield	PROFIBUS DP cable shield
2	M24	Not used

Pin number	Signal	Description
3	RxD/TxD-P (B)	Positive data transmission (RD+ / TD+) = B
4	CNTR-P	Positive repeater monitoring signal (direction monitoring)
5	DGND	Data transmission ground
6	VP	Line termination bias voltage
7	P24	Not used
8	RxD/TxD-N (A)	Negative data transmission (RD- / TD-) = A
9	CNTR-N	Control signal to repeater (-)

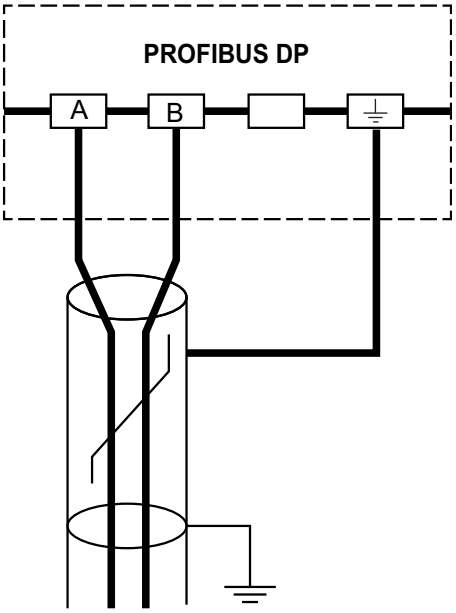
Wiring Diagram of LTMT Main Units Connected with Terminal Connector

LTMT Main Units Connected with Terminal Connector

The wiring diagram for connection of LTMT main units installed in an enclosure with the RS 485 bus via 4-terminal connectors is as follows:



Wiring Diagram of the Terminal Connector



Terminal Connector Assignment

Terminal	Signal	Description
A	RD-/TD-	Negative data transmission
B	RD+/TD+	Positive data transmission

Terminal	Signal	Description
Blank	–	Not used
⏚	–	Shielded earth

Wiring Characteristics

The PROFIBUS DP cable must be a shielded twisted pair cable. PROFIBUS DP TSXPBSCA-00 shielded cable is recommended.

The following table describes the characteristics of screw terminals:

Pitch	5 mm	0.2 in.
Tightening torque	0.2 N•m	3 lb-in
Flat screwdriver	3 mm	0.10 in.

Screw terminals have an insulation rating of 320 Vac.

Implementation of PROFIBUS DP Protocol

What's in This Part

Overview

The PROFIBUS DP is an open industrial standard for integrated communication. It is a serial fieldbus, which provides a decentralized connection between two types of devices:

- Client devices
- Server devices

It is a bi-directional network, in which the client device sends a request to a server device, and the server device responds to that request.

The PROFIBUS DP LTMT main unit is a server and supports a PROFIBUS DP application profile based on DP-V0 and DP-V1 services.

Module in GSD File

Overview

The TeSys Tera system is presented as a modular device on the PROFIBUS DP network. A General Station Description (GSD) file describes the TeSys Tera system. The GSD file can be used by any PROFIBUS DP configuration tool to get information about the device.

GSD File

The file for the PROFIBUS DP LTMT main unit is called CCCCCC.GSD.

- For the GSD files 2.01, CCCCCC stands for TT2011AE_0102.gsd.

The GSD files and icons associated with the LTMT main unit can be downloaded from www.se.com/ww/en/download/.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not modify the GSD file in any manner.
- Modifying the GSD file can cause unpredictable behavior of the devices.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: If the GSD file is modified in any manner, the Schneider Electric guarantee is immediately void.

Cyclic and Acyclic Services

Overview

In general, the data is exchanged via cyclic service and acyclic services. The application profiles that are supported under cyclic services are:

- Manufacturer independent data
- Manufacturer specific data

The fixed set and defined use of manufacturer independent data enables the replacement of a module from the vendor A and by a module from the vendor B.

DP-V0 Services

The DP-V0 services are used for:

- PROFIBUS DP configuration
- Cyclic input and output (I/O) data exchange, according to a selected data module
- Device and communication diagnostics

DP-V1 Read and Write Services

The DP-V1 read and write services enable the access to the acyclic data sets.

PKW Feature

To make this data accessible also for DP-V0 clients, a special feature called Periodically Kept in acyclic Words (PKW), is implemented. In cyclically exchanged data, there are encapsulated request and response frames. They provide access to TeSys Tera systems internal registers.

NOTE: This feature can be selected or deselected by choosing the relevant item (module) from the list offered during configuration with any PROFIBUS DP configuration tool.

Identification and Monitoring Data

Overview

The call mechanism in use for the Identification and Monitoring (I&M) functions are defined within the standard IEC 61158-6, chapter 6.1. The data structure of a call mechanism consists of DP-V1 header, call header, and the body.

Request

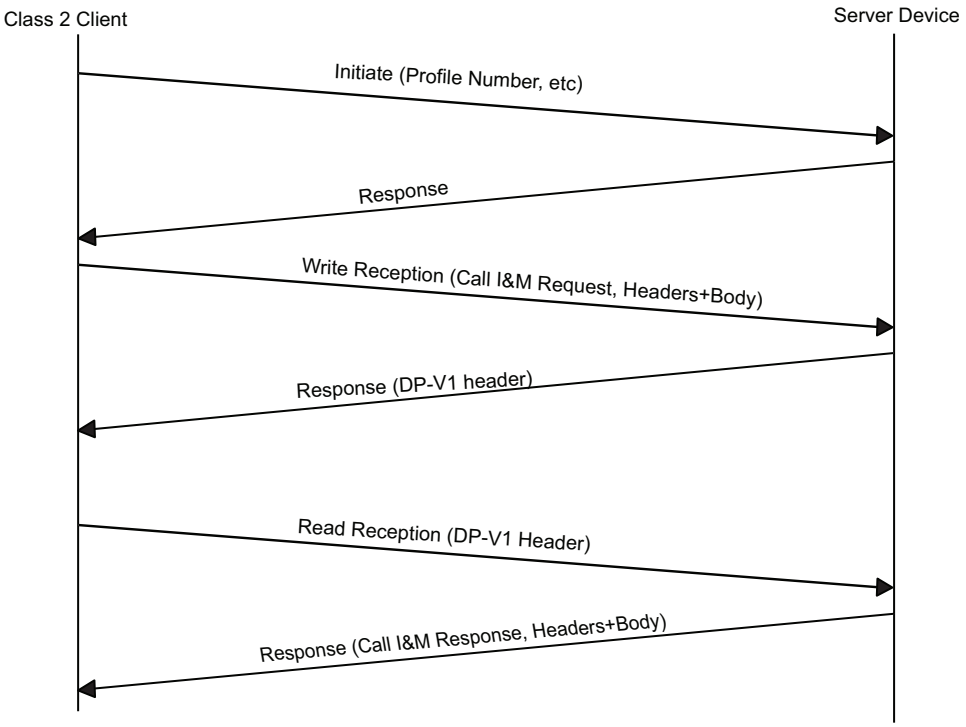
Definition	Number of Bytes	Value	Comment	Category
FUNCTION_NUM	1 octet	5 Fh	Indicates write fix	DP-V1 header
Slot number	1 octet	0 to 255	Variable	
Index	1 octet	255	Fix	
Length of net data	1 octet	68 (with body)	Length of I&M data set	
EX-TENDED_ FUNCTION_NUM	1 octet	08 h	Indicates CALL fix	Call header
Reserved	1 octet	0 h	Fix	
IM_INDEX	2 octets	65000 to 65199	Reserved for I&M	
IM_FUNCTION	64 octets	In accordance with the definition	I&M3 descriptor	Body

NOTE: In case of Read Log, there is no item within the write call.

Response

Definition	Number of Bytes	Value	Comment	Category
FUNCTION_NUM	1 octet	5 Eh	Indicates read fix	DP-V1 header
Slot number	1 octet	0 to 255	Variable	
Index	1 octet	255	Fix	
Length of net data	1 octet	68 (with body)	Length of I&M data set	
EX-TENDED_ FUNCTION_NUM	1 octet	08 h	Indicates CALL fix	Call header
Reserved	1 octet	0 h	Fix	
IM_INDEX	2 octets	65000 to 65199	Reserved for I&M	
IM_FUNCTION	64 octets	In accordance with the definition	I&M3 descriptor	Body

NOTE: In case of Write Log, there is no item within the read call.


Class 2 Client
Server Device
Initiate (Profile Number, etc)
Response
Write Reception (Call I&M Request, Headers+Body)
Response (DP-V1 header)
Read Reception (DP-V1 Header)
Response (Call I&M Response, Headers+Body)

Cyclic Services

What's in This Part

Overview

The LTMT main unit supports the DP-V0 services for:

- Cyclic input and output (I/O) data exchange, according to a selected data module.
- Device and communication diagnostics.

Data Modules

The LTMT main unit supports different data modules. Based on the requirement, one of the available data modules can be selected.

The input data in the data module can be configured using a PC running the TeSys Tera DTM embedded in a FDT container, such as SoMove software. The available data modules are described in the following table:

Module name	Input data size (bytes)	Output data size (bytes)
Module 1: 4B-OUT 2W-IN	4	4
Module 2: 4B-OUT 4W-IN	8	4
Module 3: 4B-OUT 5W-IN	10	4
Module 4: 4B-OUT 6W-IN	12	4
Module 5: 4B-OUT 8W-IN	16	4
Module 6: 4B-OUT 10W-IN	20	4
Module 7: 4B-OUT 12W-IN	24	4
Module 8: 4B-OUT 16W-IN	32	4
Module 9: 1W-IN	2	0
Module 10: 2W-IN	4	0
Module 11: 3W-IN	6	0
Module 12: 4W-IN	8	0
Module 13: PKW	18	10

Table Format

The PROFIBUS DP data tables have the following columns:

Byte offset	Size (in bytes)	Byte.Bit	RW	X	Unit	Type	Parameter name

Designation	Description
Byte offset	Number of bytes from the index.
Size (in bytes)	Number of bytes that need to be read or written to access the complete information.
Byte.Bit	Number of the bit in a byte, for boolean data only.
RW	Whether the data is read only (R) or read-write (RW).
X	Scale factor: • A scale of 1 means that the value of the data is the right one with the unit indicated. • A scale of 10 means that the data contains the value multiplied by 10. The actual value is therefore the value of the data divided by 10. • A scale of 0.1 means that the data contains the value multiplied by 0.1. The actual value is therefore the value of the data multiplied by 10.
Unit	Unit of the value, only for integer data types.
Type	Coding data type (see **Data Types** table below).
Parameter name	Information about the data and the restrictions that apply.

Data Types

Name	Description	Range
INT16	16-bit signed integer (1 word)	-32768...+32767
UINT16	16-bit unsigned integer (1 word)	0...65535
UINT32	32-bit unsigned integer (2 words)	0...4 294 967 295
UINT64	64-bit unsigned integer (4 words)	0...18 446 744 073 709 600 000
BOOL	1-bit data	0–1
BITMAP	16–bit field (1 word)	–

Example of Endianness

Data Type	Value	Value in Hexadecimal	Big-endian	Little-endian
UINT16/INT16	1000	03E8	03 E8	E8 03
UINT32/INT32	70000	00011170	00 01 11 70	70 11 01 00
UINT64/INT64	100000	00000000000186A0	00 00 00 00 00 01 86 A0	A0 86 01 00 00 00 00 00

Input Data

The input data is configurable using a PC running the TeSys Tera DTM embedded in a FDT container, such as SoMove software. It assigns address of the required data. You can use the Data Addresses, page 158 and Data Modules, page 36 to configure the input data.

For example, to monitor the average current and average voltage parameters in the cyclic data, complete the following steps:

1. Select Module 1 (4B-OUT 2W-IN) from the module table in Data Modules, page 36 section.

   NOTE: The module is selected based on the size of the parameter selected. The size of average current and average voltage parameters is 2 bytes each.

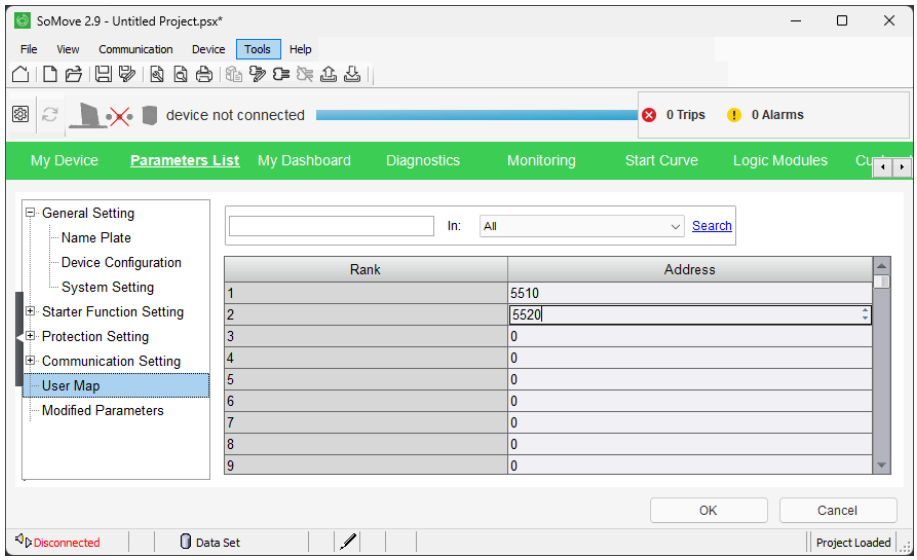
2. Open TeSys Tera DTM using SoMove software to configure average current and average voltage parameters in Module 1.

   For more information on how to launch the SoMove software, refer to *SoMove Online Help*.

3. Select **Parameter List > User Map**.

   For more information, refer to the *TeSys Tera Motor Management System DTM Library Online Help Guide – DOCA0275EN*.

4. Configure addresses 5510 (average current) and 5520 (average voltage) in the fields **Rank 1** and **Rank 2**.



5. Click **OK**.
6. After configuration, you can read the input data in the following order:

Byte 0	Byte 1	Byte 2	Byte 3
5510 (high byte)	5510 (low byte)	5520 (high byte)	5520 (low byte)

Configuration of Acyclic Data in Cyclic Services

To configure acyclic data in cyclic services, you must calculate the address of the respective parameters.

The address of the parameter is calculated using formula:

$$\text{Address} = \text{Start Address} + \left(\frac{\text{Byte offset of the parameter}}{2} \right)$$

Where,

- Start Address = Refer table below
- Byte offset of the parameter = Refer data tables in Acyclic Services (DP-V1), page 56

The following table lists the start address and end address of the different parameters in acyclic data.

Parameter Group	Start Address	End Address
Protection Settings Data (Current Protections)	3500	3590
Protection Settings Data (Voltage Protections)	3625	3691
Protection Settings Data (Other Protections)	3750	3810
Interlock Settings Data	3875	3934
Miscellaneous Settings	4250	4255
General Settings Data	4375	4474
Digital Input Settings	4500	4595
Digital Output Settings	4625	4694
Trip Log 1 to Trip Log 3 Data	6000	6095
Trip Log 4 to Trip Log 6 Data	6096	6191
Trip Log 7 to Trip Log 9 Data	6192	6287
Trip Log 10 to Trip Log 12 Data	6288	6383
Trip Log 13 to Trip Log 15 Data	6384	6479
Trip Log 16 to Trip Log 18 Data	6480	6575
Trip Log 19 to Trip Log 20 Data	6576	6639
Event Log 1 to Event Log 15 Data	7000	7119
Event Log 16 to Event Log 30 Data	7120	7239
Event Log 31 to Event Log 45 Data	7240	7359
Event Log 46 to Event Log 60 Data	7360	7479
Event Log 61 to Event Log 75 Data	7480	7599
Event Log 76 to Event Log 90 Data	7600	7719
Event Log 91 to Event Log 100 Data	7720	7799
Internal Error Log 1 to Internal Error Log 15 Data	8000	8119
Internal Error Log 16 to Internal Error Log 20 Data	8120	8159

Parameter Group	Start Address	End Address
Motor Start Log	8375	8494
Motor Start Log	8495	8614
Motor Start Log	8615	8630

Examples

- To calculate the address of Function Setting in Thermal Overload:

$$\text{Address} = 3500 + \left(\frac{0}{2}\right) = 3500$$

- To calculate the address of Service Factor in Thermal Overload:

$$\text{Address} = 3500 + \left(\frac{2}{2}\right) = 3501$$

- To calculate the address of Trip Class in Thermal Overload:

$$\text{Address} = 3500 + \left(\frac{4}{2}\right) = 3502$$

- To calculate the address of Alarm Level in Thermal Overload:

$$\text{Address} = 3500 + \left(\frac{6}{2}\right) = 3503$$

For byte offset value, refer to Thermal Overload, page 72 topic.

For start address, refer to table in Configuring Acyclic data in Cyclic Services, page 39.

Output Data

Based on the output data size of the data module, the output data can be selected from the following table.

Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Parameter name
0	1	0.0	RW	BOOL	Motor run forward or High speed forward command
		0.1	RW	BOOL	Motor run reverse or High speed reverse command
		0.2	RW	BOOL	Local or Remote Mode Sel 1
		0.3	RW	BOOL	Trip reset command
		0.4	RW	BOOL	Local or Remote Mode Sel 2
		0.5	RW	BOOL	Self test (without trip) command
		0.6	RW	BOOL	Motor low speed forward command
		0.7	RW	BOOL	Motor low speed reverse command
1	1	1.0	RW	BOOL	Reset Inhibit command
		1.1	RW	BOOL	Reset no of starts command
		1.2	RW	BOOL	Reset no of stops command
		1.3	RW	BOOL	Clear Energy command
		1.4	RW	BOOL	Motor Stop command
		1.5	RW	BOOL	Logic test command
		1.6	RW	BOOL	Reset run hour command
		1.7	RW	BOOL	Self test (with trip) command
2	1	2.0	RW	BOOL	Reset all command
		2.1	RW	BOOL	Clear statistics data
		2.2	RW	BOOL	Clear thermal capacity level command
		2.3	RW	BOOL	Reset protection settings command
		2.4	RW	BOOL	Clear network port settings command
		2.5	RW	BOOL	Clear Trip counter command
		2.6	RW	BOOL	Reserved
		2.7	RW	BOOL	Soft starter reset command
3	1	3.0	RW	BOOL	Permissive Command 1
		3.1	RW	BOOL	Permissive Command 2
		3.2	RW	BOOL	Permissive Command 3
		3.3	RW	BOOL	Permissive Command 4
		3.4	RW	BOOL	Permissive Command 5
		3.5	RW	BOOL	Permissive Command 6
		3.6	RW	BOOL	Permissive Command 7
		3.7	RW	BOOL	Permissive Command 8

Diagnostic Data

Diagnostic data are made of:

- 13 bytes with system diagnostics, data available only with the PROFIBUS DP diagnostic feature.
- x bytes with device specific diagnostic data, available with the PROFIBUS DP diagnostic feature.

Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Parameter name
0-5	6	0.0-5.7	R	BOOL	PROFIBUS DP standard diagnostic data
6-8	3	6.0-6.7	R	BOOL	Header byte Value = 0x43 • Bit 6 and Bit 7 indicates it is identifier related diagnostic. • Bit 0 and Bit 5 indicates data block length including header byte = 3.
		7.0-7.7	R	BOOL	Identifier related diagnosis byte 1 • Identification byte 1 for faulty module identification.
		8.0-8.7	R	BOOL	Identifier related diagnosis byte 2 • Identification byte 2 for faulty module identification.
9-12	4	9.0-9.7	R	BOOL	Header byte Value = 0x16 • Bit 6 and Bit 7 indicates it is device related diagnostic. • Bit 0 and Bit 5 indicates data block length including header byte = 22.
		10.0-10.7	R	BOOL	Status type • Always 0x81 = Status message
		11.0-11.7	R	BOOL	Slot number • Always 0x01
		12.0-12.7	R	BOOL	Status specifier
13	1	13.0	R	BOOL	Thermal overload alarm
		13.1	R	BOOL	Locked rotor alarm
		13.2	R	BOOL	Stalled rotor alarm
		13.3	R	BOOL	Definite time overcurrent alarm
		13.4	R	BOOL	Normal inverse overcurrent alarm
		13.5	R	BOOL	Short time overcurrent alarm
		13.6	R	BOOL	Calculated ground current alarm
		13.7	R	BOOL	Measured ground current alarm
14	1	14.0	R	BOOL	Phase under current alarm
		14.1	R	BOOL	Current imbalance alarm
		14.2	R	BOOL	Current phase loss alarm
		14.3	R	BOOL	Current phase reversal alarm
		14.4	R	BOOL	Phase under voltage alarm
		14.5	R	BOOL	Phase over voltage alarm
		14.6	R	BOOL	Voltage phase loss alarm
		14.7	R	BOOL	Voltage imbalance alarm
15	1	15.0	R	BOOL	Voltage phase reversal alarm
		15.1	R	BOOL	Under frequency alarm

Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Parameter name
		15.2	R	BOOL	Over frequency alarm
		15.3	R	BOOL	Reserved
		15.4	R	BOOL	Communication loss alarm
		15.5	R	BOOL	Over temperature alarm
		15.6	R	BOOL	Under power alarm
		15.7	R	BOOL	Over power alarm
16	1	16.0	R	BOOL	Under power factor alarm
		16.1-16.7	R	BOOL	Reserved
17	1	17.0	R	BOOL	Interlock - 1 alarm
		17.1	R	BOOL	Interlock - 2 alarm
		17.2	R	BOOL	Interlock - 3 alarm
		17.3	R	BOOL	Interlock - 4 alarm
		17.4	R	BOOL	Interlock - 5 alarm
		17.5	R	BOOL	Interlock - 6 alarm
		17.6	R	BOOL	Interlock - 7 alarm
		17.7	R	BOOL	Interlock - 8 alarm
18	1	18.0	R	BOOL	Interlock - 9 alarm
		18.1	R	BOOL	Interlock - 10 alarm
		18.2	R	BOOL	Interlock - 11 alarm
		18.3	R	BOOL	Interlock - 12 alarm
		18.4-18.7	R	BOOL	Reserved
19	1	19.0–19.7	R	BOOL	Reserved
20	1	20.0–20.7	R	BOOL	Reserved
21	1	21.0–21.7	R	BOOL	Reserved
22	1	22.0	R	BOOL	Thermal overload trip
		22.1	R	BOOL	Locked rotor trip
		22.2	R	BOOL	Stalled rotor trip
		22.3	R	BOOL	Definite time overcurrent trip
		22.4	R	BOOL	Normal inverse overcurrent trip
		22.5	R	BOOL	Short time overcurrent trip
		22.6	R	BOOL	Calculated ground current trip
		22.7	R	BOOL	Measured ground current trip
23	1	23.0	R	BOOL	Phase under current trip
		23.1	R	BOOL	Current imbalance trip
		23.2	R	BOOL	Current phase loss trip
		23.3	R	BOOL	Current phase reversal trip
		23.4	R	BOOL	Phase under voltage trip
		23.5	R	BOOL	Phase over voltage trip
		23.6	R	BOOL	Voltage phase loss trip
		23.7	R	BOOL	Voltage imbalance trip
24	1	24.0	R	BOOL	Voltage phase reversal trip
		24.1	R	BOOL	Under frequency trip
		24.2	R	BOOL	Over frequency trip

Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Parameter name
		24.3	R	BOOL	Excessive start time trip
		24.4	R	BOOL	Communication loss trip
		24.5	R	BOOL	Over temperature trip
		24.6	R	BOOL	Under power trip
		24.7	R	BOOL	Over power trip
25	1	25.0	R	BOOL	Under power factor trip
		25.1-25.7	R	BOOL	Reserved
26	1	26.0	R	BOOL	Interlock - 1 trip
		26.1	R	BOOL	Interlock - 2 trip
		26.2	R	BOOL	Interlock - 3 trip
		26.3	R	BOOL	Interlock - 4 trip
		26.4	R	BOOL	Interlock - 5 trip
		26.5	R	BOOL	Interlock - 6 trip
		26.6	R	BOOL	Interlock - 7 trip
		26.7	R	BOOL	Interlock - 8 trip
27	1	27.0	R	BOOL	Interlock - 9 trip
		27.1	R	BOOL	Interlock - 10 trip
		27.2	R	BOOL	Interlock - 11 trip
		27.3	R	BOOL	Interlock - 12 trip
		27.4-27.7	R	BOOL	Reserved
28	1	28.0–28.7	R	BOOL	Reserved
29	1	29.0–29.7	R	BOOL	Reserved
30	1	30.0–30.7	R	BOOL	Reserved

PKW Encapsulated Acyclic Accesses in Cyclic Services

What's in This Part

Overview

Some PROFIBUS DP clients do not provide acyclic service (DP-V1). The PKW feature is implemented to allow acyclic read or write accesses to be encapsulated in cyclic services (DP-V0).

This feature is enabled in the PROFIBUS DP configuration tool by selecting the appropriate module. The PKW data is added to the cyclic data.

Read or Write Registers

You can read or write any register with the PKW data. The 8 bytes are interpreted as a request telegram or a response telegram encapsulated in IN data and OUT data.

PKW OUT Data

PKW OUT data request (PROFIBUS DP client to LTMT main unit) is mapped in modules supporting PKW.

To access a register, you must select one of the following function codes:

- R_REG_16 = 0x25 to read 1 register
- R_REG_32 = 0x26 to read 2 registers
- W_REG_16 = 0x2A to write 1 register
- W_REG_32 = 0x2B to write 2 registers

Word 1	**Word 2**			**Word 3**	**Word 4**
Register address	Toggle bit (bit 15)	Function bits (bits 8 to 14)	Not used (bits 0 to 7)	Data to write	
Register number	0/1	R_REG_16 Code 0x25	0x00	–	–
		R_REG_32 Code 0x26		–	–
		W_REG_16 Code 0x2A		Data to write in register	–
		W_REG_32 Code 0x2B		Data to write in register 1	Data to write in register 2

Depending on the PLC platform used, refer to the PKW OUT description in little and big endian formats to know the positioning of each field inside each word.

Any changes in the function field will trigger the handling of the request (except if function code is 0x00).

Toggle bit must change at each consecutive request. This mechanism allows the request initiator to detect that a response is ready by polling the toggle bit in response. When this bit in the OUT data becomes equal to the response emitted toggle bit in the IN data, then the response is ready.

PKW IN Data

PKW IN data response (LTMT main unit to PROFIBUS DP client) is mapped in modules supporting PKW. The LTMT main unit echoes the same register address and function code or eventually an error code:

Word 1	**Word 2**			**Word 3**	**Word 5**
Register address	Toggle bit (bit 15)	Function bits (bits 8 to 14)	Not used (bits 0 to 7)	Data to write	
Same register number as in request	Same as request	ERROR Code 0x4E	0x00	Error code	
		R_REG_16 Code 0x25		Data read in register	–
		R_REG_32 Code 0x26		Data read in register 1	Data read in register 2
		W_REG_16 Code 0x2A		–	–
		W_REG_32 Code 0x2B		–	–

Depending on the PLC platform used, refer to the PKW IN description in little and big endian formats to know the positioning of each field inside each word.

If the initiator tries to write a TeSys Tera object or register to an unauthorized value, or tries to access an inaccessible register, an error code is triggered (function code = toggle bit + 0x4E). The exact error code can be found in words 3 and 4. The request is not accepted and the object or register remains at the old value.

If you want to re-trigger exactly the same command, you must:

1. Reset the function code to 0x00.
2. Wait for the response frame with the function code equal to 0x00.
3. Set it again to its previous value.

This is useful for a limited client like an HMI. Another way of re-triggering exactly the same command is to invert the toggle bit in the function code byte.

The response is valid when the toggle bit of the response is equal to the toggle bit written in the answer (this is a more efficient method, however it requires higher programming capabilities).

PKW Error Codes

The table list the example of write errors:

Error Code	Error Name	Explanation
1	FGP_ERR_REQ_STACK_FULL	external request: sends back an error frame
3	FGP_ERR_REGISTER_NOT_FOUND	register not managed (or the request needs super user access rights)
4	FGP_ERR_ANSWER_DELAYED	external request: answer postponed
7	FGP_ERR_NOT_ALL_REGISTER_FOUND	one or both registers cannot be found
8	FGP_ERR_READ_ONLY	register not authorized to be written
10	FGP_ERR_VAL_1WORD_TOOHIGH	written value not in the range of the register (word value is too high)
11	FGP_ERR_VAL_1WORD_TOOLOW	written value not in the range of the register (word value is too low)
12	FGP_ERR_VAL_2BYTES_INF_TOOHIGH	written value not in the range of the register (MSB value is too high)
13	FGP_ERR_VAL_2BYTES_INF_TOOLOW	written value not in the range of the register (MSB value is too low)
16	FGP_ERR_VAL_INVALID	written value not a valid value
20	FGP_ERR_BAD_ANSWER	external request: sends back an error frame

The table list the example of read errors:

Error Code	Error Name	Explanation
1	FGP_ERR_REQ_STACK_FULL	external request: sends back an error frame
3	FGP_ERR_REGISTER_NOT_FOUND	register not managed (or the request needs super user access rights)
4	FGP_ERR_ANSWER_DELAYED	external request: answer postponed
7	FGP_ERR_NOT_ALL_REGISTER_FOUND	one or both registers cannot be found

Acyclic Data Read or Write via PROFIBUS DP-V1

What's in This Part

Overview

For acyclic read or write, you have to follow the mechanism based on slot or index and length addressing in the LTMT main unit. For more information, refer to Data Mapping, page 58.

Read Acyclic Data

With DS_Read function, the PROFIBUS DP client can read data from the server.

For example: To read the current protection setting, set the data as follows:

Byte	Value
0 (Function number)	0X5E (DS_Read function)
1 (Slot number)	1
2 (Index)	5
3 (Length)	26
4 to 7	Value of the current protection setting

For more information, refer to Data Mapping, page 58.

Write Acyclic Data

With DS_Write function, the PROFIBUS DP client can send data to the server. Before writing a block of data, it is recommended to read a block of data first, in order to protect data that is not impacted. The whole block will only be written if you have writing access, to be checked within each register table in the communication variables table.

For example: To write the current protection setting, set the data as follows:

Byte	Value
0 (Function number)	0X5E (DS_Write function)
1 (Slot number)	1
2 (Index)	5
3 (Length)	4
4 to 7	New value of the current protection setting

For more information, refer to Data Mapping, page 58.

Feedback in Case of Error

If you do not have access, no register is accessed and an error value will be returned via DP-V1. The first four bytes of the response on DP in the case of an error are given as follows:

Byte	Value	Meaning
0	0XDE/0XDF	For DS_Read/DS_Write
1	0X80	Indicating DP-V1

Acyclic Services

What's in This Part

Overview

The LTMT main unit supports the motor control, monitor, and controller configuration over PROFIBUS DP-V1.

Data Mapping

For acyclic DP-V1 access, a mechanism based on slot or index and length addressing is implemented in the LTMT main unit.

Slot	Index	Read/Write	Description
1	0	Read	Diagnostic Data, page 61
1	1	Read	Input Data, page 64
1	2	Read/Write	Output Data, page 65
1	3	Read	Measurement and Monitoring Data, page 66
1	4	Read	Statistic Data, page 69
1	5	Read/Write	Current Protection Settings, page 74
1	6	Read/Write	Voltage Protection Settings, page 80
1	7	Read/Write	Motor Control Function Settings, page 89
1	8	Read/Write	Digital Input Interlock Protection Settings, page 94
1	9	Read/Write	General Settings, page 96
1	10	Read/Write	Communication Parameters, page 103
1	11–17	Read	Trip Logs, page 105
1	18–24	Read	Event Logs, page 107
1	25–26	Read	Detected Internal Error Logs, page 110
1	27	Read	Digital Inputs Settings, page 111
1	28	Read/Write	Digital Output Settings, page 114
1	29	Read/Write	Hysteresis Settings, page 117
1	30–32	Read/Write	Motor Start Logs, page 118
1	33	Read	Status Data, page 120
1	34	Read	Reserved
1	35	Read	Reserved
1	36	Read/Write	Reserved

Table Format

The PROFIBUS DP data tables have the following columns:

Slot	Index	Byte offset	Size (in bytes)	Byte. Bit	RW	X	Unit	Type	Range	Default value	Svd	Parameter name

Designation	Description
Slot/Index	DP-V1 addressing mechanism
Byte offset	Number of bytes from the index.
Size (in bytes)	Number of bytes that need to be read or written to access the complete information.
Byte.Bit	Number of the bit in a byte, for boolean data only.
RW	Whether the data is read only (R) or read-write (RW).
X	Scale factor: • A scale of 1 means that the value of the data is the right one with the unit indicated. • A scale of 10 means that the data contains the value multiplied by 10. The actual value is therefore the value of the data divided by 10. • A scale of 0.1 means that the data contains the value multiplied by 0.1. The actual value is therefore the value of the data multiplied by 10.
Unit	Unit of the value, only for integer data types.
Type	Coding data type (see **Data Types** table below).
Range	Range of permitted values for the variable, usually a subset of what the format allows. Only for integer data types that can be written. For BITMAP data type, the content range does not exist.
Default Value	Default value for the parameter.
Svd	Value saved when the power supply to the TeSys Tera system is switched off: • Y: the value of the data is saved. • N: the value is lost. **NOTE:** The saved values are retrieved when the power supply to the TeSys Tera system is switched on.
Parameter name	Information about the data and the restrictions that apply.

Data Types

Name	Description	Range
INT16	16-bit signed integer (1 word)	-32768...+32767
UINT16	16-bit unsigned integer (1 word)	0...65535
UINT32	32-bit unsigned integer (2 words)	0...4 294 967 295
UINT64	64-bit unsigned integer (4 words)	0...18 446 744 073 709 600 000
BOOL	1-bit data	0–1
BITMAP	16-bit field (1 word)	–
UINT8	8-bit unsigned character	0–255

Example of Endianness

Data Type	Value	Value in Hexadecimal	Big-endian	Little-endian
UINT16/INT16	1000	03E8	03 E8	E8 03
UINT32/INT32	70000	00011170	00 01 11 70	70 11 01 00
UINT64/INT64	100000	00000000000186A0	00 00 00 00 00 01 86 A0	A0 86 01 00 00 00 00 00

Date and Time

The date and time of events is coded in 8 bytes.

Byte offset	Size (in bytes)	Parameter name
0	1	Day (1–31)
1	1	Month (1–12)
2	1	Year (0–99)
3	1	Hour (0–23)
4	1	Minute (0–59)
5	1	Second (0–59)
6	2	Millisecond (0–999)

For setting date and time, refer to the Real-Time Clock Settings, page 99.

Diagnostic Data

Diagnostic data are made of:

- 13 bytes with system diagnostics, data available only with the PROFIBUS DP diagnostic feature
- x bytes with device specific diagnostic data, available with the PROFIBUS DP diagnostic feature and as acyclic data for slot 1, index 0

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	0	0–5	6	0.0–5.7	R	BOOL	–	PROFIBUS DP standard diagnostic data
1	0	6–8	3	6.0–6.7	R	BOOL	–	Header byte Value = 0x43 • Bit 6 and Bit 7 indicates it is identifier related diagnostic. • Bit 0 and Bit 5 indicates data block length including header byte = 3.
				7.0–7.7	R	BOOL	–	Identifier related diagnosis byte 1
				8.0-8.7	R	BOOL	–	Identifier related diagnosis byte 2
1	0	9–12	4	9.0-9.7	R	BOOL	–	Header byte Value = 0x16 • Bit 6 and Bit 7 indicates it is device related diagnostic. • Bit 0 and Bit 5 indicates data block length including header byte = 22.
				10.0–10.7	R	BOOL	–	Status type • Always 0x01 = Diagnostic alarm
				11.0–11.7	R	BOOL	–	Slot number • Always 0x01
				12.0–12.7	R	BOOL	–	Status specifier
1	0	13	1	13.0	R	BOOL	N	Thermal overload alarm
				13.1	R	BOOL	N	Locked rotor alarm
				13.2	R	BOOL	N	Stalled rotor alarm
				13.3	R	BOOL	N	Definite time overcurrent alarm
				13.4	R	BOOL	N	Normal inverse overcurrent alarm
				13.5	R	BOOL	N	Short time overcurrent alarm
				13.6	R	BOOL	N	Calculated ground current alarm
				13.7	R	BOOL	N	Measured ground current alarm
1	0	14	1	14.0	R	BOOL	N	Phase under current alarm
				14.1	R	BOOL	N	Current imbalance alarm
				14.2	R	BOOL	N	Current phase loss alarm
				14.3	R	BOOL	N	Current phase reversal alarm
				14.4	R	BOOL	N	Phase under voltage alarm
				14.5	R	BOOL	N	Phase over voltage alarm
				14.6	R	BOOL	N	Voltage phase loss alarm

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
				14.7	R	BOOL	N	Voltage imbalance alarm
1	0	15	1	15.0	R	BOOL	N	Voltage phase reversal alarm
				15.1	R	BOOL	N	Under frequency alarm
				15.2	R	BOOL	N	Over frequency alarm
				15.3	R	BOOL	N	Reserved
				15.4	R	BOOL	N	Communication loss alarm
				15.5	R	BOOL	N	Over temperature alarm
				15.6	R	BOOL	N	Under power alarm
				15.7	R	BOOL	N	Over power alarm
1	0	16	1	16.0	R	BOOL	N	Under power factor alarm
				16.1-16.7	R	BOOL	N	Reserved
1	0	17	1	17.0	R	BOOL	N	Interlock - 1 alarm
				17.1	R	BOOL	N	Interlock - 2 alarm
				17.2	R	BOOL	N	Interlock - 3 alarm
				17.3	R	BOOL	N	Interlock - 4 alarm
				17.4	R	BOOL	N	Interlock - 5 alarm
				17.5	R	BOOL	N	Interlock - 6 alarm
				17.6	R	BOOL	N	Interlock - 7 alarm
				17.7	R	BOOL	N	Interlock - 8 alarm
1	0	18	1	18.0	R	BOOL	N	Interlock - 9 alarm
				18.1	R	BOOL	N	Interlock - 10 alarm
				18.2	R	BOOL	N	Interlock - 11 alarm
				18.3	R	BOOL	N	Interlock - 12 alarm
				18.4–18.7	R	BOOL	N	Reserved
1	0	19	1	19.019.7	R	BOOL	N	Reserved
1	0	20	1	20.0–20.7	R	BOOL	N	Reserved
1	0	21	1	21.0–21.7	R	BOOL	N	Reserved
1	0	22	1	22.0	R	BOOL	N	Thermal overload trip
				22.1	R	BOOL	N	Locked rotor trip
				22.2	R	BOOL	N	Stalled rotor trip
				22.3	R	BOOL	N	Definite time overcurrent trip
				22.4	R	BOOL	N	Normal inverse overcurrent trip
				22.5	R	BOOL	N	Short time overcurrent trip
				22.6	R	BOOL	N	Calculated ground current trip
				22.7	R	BOOL	N	Measured ground current trip
1	0	23	1	23.0	R	BOOL	N	Phase under current trip
				23.1	R	BOOL	N	Current imbalance trip
				23.2	R	BOOL	N	Current phase loss trip
				23.3	R	BOOL	N	Current phase reversal trip
				23.4	R	BOOL	N	Phase under voltage trip
				23.5	R	BOOL	N	Phase over voltage trip
				23.6	R	BOOL	N	Voltage phase loss trip
				23.7	R	BOOL	N	Voltage imbalance trip

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	0	24	1	24.0	R	BOOL	N	Voltage phase reversal trip
				24.1	R	BOOL	N	Under frequency trip
				24.2	R	BOOL	N	Over frequency trip
				24.3	R	BOOL	N	Excessive start time trip
				24.4	R	BOOL	N	Communication loss trip
				24.5	R	BOOL	N	Over temperature trip
				24.6	R	BOOL	N	Under power trip
				24.7	R	BOOL	N	Over power trip
1	0	25	1	25.0	R	BOOL	N	Under power factor trip
				25.1–25.7	R	BOOL	N	Reserved
1	0	26	1	26.0	R	BOOL	N	Interlock - 1 trip
				26.1	R	BOOL	N	Interlock - 2 trip
				26.2	R	BOOL	N	Interlock - 3 trip
				26.3	R	BOOL	N	Interlock - 4 trip
				26.4	R	BOOL	N	Interlock - 5 trip
				26.5	R	BOOL	N	Interlock - 6 trip
				26.6	R	BOOL	N	Interlock - 7 trip
				26.7	R	BOOL	N	Interlock - 8 trip
1	0	27	1	27.0	R	BOOL	N	Interlock - 9 trip
				27.1	R	BOOL	N	Interlock - 10 trip
				27.2	R	BOOL	N	Interlock - 11 trip
				27.3	R	BOOL	N	Interlock - 12 trip
				27.4–27.7	R	BOOL	N	Reserved
1	0	28	1	28.0–28.7	R	BOOL	N	Reserved
1	0	29	1	29.0–29.7	R	BOOL	N	Reserved
1	0	30	1	30.0–30.7	R	BOOL	N	Reserved

Input Data

The input data with DP-V1 are same as the input data that are selected in DP-V0 and is assigned to Slot 1 and Index 1. For more information on the input data that can be configured in DP-V0, refer to section Input Data, page 38.

Output Data

Based on the output data size of the data module, the output data can be selected from the following table.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	2	0	1	0.0	RW	BOOL	N	Motor run forward or High speed forward command
				0.1	RW	BOOL	N	Motor run reverse or High speed reverse command
				0.2	RW	BOOL	N	Local or Remote Mode Sel 1
				0.3	RW	BOOL	N	Trip reset command
				0.4	RW	BOOL	N	Local or Remote Mode Sel 2
				0.5	RW	BOOL	N	Self test (without trip) command
				0.6	RW	BOOL	N	Motor low speed forward command
				0.7	RW	BOOL	N	Motor low speed reverse command
1	2	1	1	1.0	RW	BOOL	N	Reset Inhibit command
				1.1	RW	BOOL	N	Reset no of starts command
				1.2	RW	BOOL	N	Reset no of stops command
				1.3	RW	BOOL	N	Clear Energy command
				1.4	RW	BOOL	N	Motor Stop command
				1.5	RW	BOOL	N	Logic test command
				1.6	RW	BOOL	N	Reset run hour command
				1.7	RW	BOOL	N	Self test (with trip) command
1	2	2	1	2.0	RW	BOOL	N	Reserved
				2.1	RW	BOOL	N	Reserved
				2.2	RW	BOOL	N	Clear thermal capacity level command
				2.3	RW	BOOL	N	Reserved
				2.4	RW	BOOL	N	Clear network port settings command
				2.5	RW	BOOL	N	Clear Trip counter command
				2.6	RW	BOOL	N	Reserved
				2.7	RW	BOOL	N	Soft starter reset command
1	2	3	1	3.0	RW	BOOL	N	Permissive Command 1
				3.1	RW	BOOL	N	Permissive Command 2
				3.2	RW	BOOL	N	Permissive Command 3
				3.3	RW	BOOL	N	Permissive Command 4
				3.4	RW	BOOL	N	Permissive Command 5
				3.5	RW	BOOL	N	Permissive Command 6
				3.6	RW	BOOL	N	Permissive Command 7
				3.7	RW	BOOL	N	Permissive Command 8

Measurement and Monitoring Data

What's in This Chapter

Metering Data

The table lists the metering data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	3	0	4	R	0.001	A	UINT32	N	L1 RMS current
1	3	4	4	R	0.001	A	UINT32	N	L2 RMS current
1	3	8	4	R	0.001	A	UINT32	N	L3 RMS current
1	3	12	4	R	0.001	A	UINT32	N	Measured ground current
1	3	16	4	R	0.001	A	UINT32	N	Calculated ground current
1	3	20	4	R	0.001	A	UINT32	N	Average current
1	3	24	2	R	0.01	%	UINT16	N	Current imbalance
1	3	26	2	R	1	–	UINT16	N	Current phase sequence • 0: – • 1: L123 • 2: L132 • 3: CTWF (CT wiring error)
1	3	28	4	R	0.1	V	UINT32	N	For single phase, L1–N RMS voltage For three phase, L1–L2 RMS voltage
1	3	32	4	R	0.1	V	UINT32	N	L2–L3 RMS voltage
1	3	36	4	R	0.1	V	UINT32	N	L3–L1 RMS voltage
1	3	40	4	R	0.1	V	UINT32	N	Average voltage
1	3	44	2	R	0.01	%	UINT16	N	Voltage imbalance
1	3	46	2	R	1	–	UINT16	N	Voltage phase sequence • 0: – • 1: L123 • 2: L132
1	3	48	2	R	0.01	Hz	UINT16	N	System frequency
1	3	50	2	R	0.01	–	UINT16	N	System power factor
1	3	52	4	R	0.001	kW	UINT32	N	Total active power
1	3	56	4	R	0.001	kvar	UINT32	N	Total reactive power
1	3	60	4	R	0.001	kVA	UINT32	N	Total apparent power
1	3	64	8	R	0.001	kWh	UINT64	Y	Total active energy
1	3	72	8	R	0.001	kvarh	UINT64	Y	Total reactive energy
1	3	80	8	R	0.001	kVAh	UINT64	Y	Total apparent energy
1	3	88	2	R	1	%	UINT16	N	L1 Current THD
1	3	90	2	R	1	%	UINT16	N	L2 Current THD
1	3	92	2	R	1	%	UINT16	N	L3 Current THD
1	3	94	2	R	1	%	UINT16	N	For single phase, L1–N Voltage THD For three phase, L1–L2 Voltage THD
1	3	96	2	R	1	%	UINT16	N	L2–L3 Voltage THD
1	3	98	2	R	1	%	UINT16	N	L3–L1 Voltage THD

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	3	100	2	R	0.1	°C or F	UINT16	N	Temperature measured by PT100 sensor[1]
1	3	102	2	R	1	Ω	UINT16	N	Temperature measured by binary PTC sensor
1	3	104	10	–	–	–	–	–	Reserved

Motor Data

The table lists the motor data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	3	114	2	R	1	–	UINT16	N	Motor status • 1 – Stop • 2 – Start • 4 – Run
1	3	116	2	R	1	%	UINT16	Y	Thermal memory
1	3	118	4	R	1	s	UINT32	N	Thermal time to trip
1	3	122	4	R	1	s	UINT32	N	Thermal time to cool
1	3	126	2	R	1	–	UINT16	Y	Max starts counter or Max starts per hour counter
1	3	128	4	R	1	s	UINT32	Y	Max start time or Max start inhibit time
1	3	132	4	R	0.001	A	UINT32	N	Motor starting peak current
1	3	136	4	R	0.001	s	UINT32	N	Motor starting time
1	3	140	4	R	1	min	UINT32	Y	Total run hour
1	3	144	4	R	1	min	UINT32	Y	Last run hour
1	3	148	2	R	1	–	UINT16	Y	Number of starts
1	3	150	2	R	1	–	UINT16	Y	Number of stops
1	3	152	2	R	1	–	UINT16	Y	Motor stop cause • 0: None • 1: HMI • 2: Local DI • 3: Remote DI • 4: Communication • 5: Auto restart • 6: Trip • 7: Auto • 8: Forced stop • 9: Direction change • 10: No feedback • 11: Speed change • 12: Custom stop • 13: Mode transfer • 14: Device internal • 15: No voltage
1	3	154	2	R	1	–	UINT16	Y	Trip counter

1. For temperature measurement, refer to the unit selected.

Last Motor Start Time Stamp

The table lists the last motor start time stamp data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	3	156	2	R	1	–	UINT16	Y	Day
1	3	158	2	R	1	–	UINT16	Y	Month
1	3	160	2	R	1	–	UINT16	Y	Year
1	3	162	2	R	1	h	UINT16	Y	Hour
1	3	164	2	R	1	min	UINT16	Y	Minute
1	3	166	2	R	1	s	UINT16	Y	Second
1	3	168	2	–	–	–	–	–	Reserved

Statistic Data

The table lists the statistic data for the PROFIBUS DP communication.

Index	Slot	Byte offset	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	4	0	2	R	1	ms	UINT16	N	Timer 1 - Actual value
1	4	2	2	R	1	ms	UINT16	N	Timer 2 - Actual value
1	4	4	2	R	1	ms	UINT16	N	Timer 3 - Actual value
1	4	6	2	R	1	ms	UINT16	N	Timer 4 - Actual value
1	4	8	2	R	1	–	UINT16	N	Counter 1 - Actual value
1	4	10	2	R	1	–	UINT16	N	Counter 2 - Actual value
1	4	12	2	R	1	–	UINT16	N	Counter 3 - Actual value
1	4	14	2	R	1	–	UINT16	N	Counter 4 - Actual value
1	4	16	2	R	1	–	UINT16	N	Thermal overload trip counter
1	4	18	2	R	1	–	UINT16	N	Locked rotor trip counter
1	4	20	2	R	1	–	UINT16	N	Stalled rotor trip counter
1	4	22	2	R	1	–	UINT16	N	Definite time overcurrent trip counter
1	4	24	2	R	1	–	UINT16	N	Normal inverse overcurrent trip counter
1	4	26	2	R	1	–	UINT16	N	Short time overcurrent trip counter
1	4	28	2	R	1	–	UINT16	N	Calculated ground trip counter
1	4	30	2	R	1	–	UINT16	N	Measured ground trip counter
1	4	32	2	R	1	–	UINT16	N	Phase under current trip counter
1	4	34	2	R	1	–	UINT16	N	Current imbalance trip counter
1	4	36	2	R	1	–	UINT16	N	Current phase loss trip counter
1	4	38	2	R	1	–	UINT16	N	Current phase reversal trip counter
1	4	40	2	R	1	–	UINT16	N	Phase under voltage trip counter
1	4	42	2	R	1	–	UINT16	N	Phase over voltage trip counter

Index	Slot	Byte offset	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	4	44	2	R	1	–	UINT16	N	Voltage phase loss trip counter
1	4	46	2	R	1	–	UINT16	N	Voltage imbalance trip counter
1	4	48	2	R	1	–	UINT16	N	Voltage phase reversal trip counter
1	4	50	2	R	1	–	UINT16	N	Under frequency trip counter
1	4	52	2	R	1	–	UINT16	N	Over frequency trip counter
1	4	54	2	R	1	–	UINT16	N	Excessive start time trip counter
1	4	56	2	R	1	–	UINT16	N	Communication loss trip counter
1	4	58	2	R	1	–	UINT16	N	LTMT main unit temperature trip counter
1	4	60	2	R	1	–	UINT16	N	Under power trip counter
1	4	62	2	R	1	–	UINT16	N	Over power trip counter
1	4	64	2	R	1	–	UINT16	N	Under power factor trip counter
1	4	66–78	14	–	–	–	–	–	Reserved
1	4	80	2	R	1	–	UINT16	N	DI interlock 1 trip counter
1	4	82	2	R	1	–	UINT16	N	DI interlock 2 trip counter
1	4	84	2	R	1	–	UINT16	N	DI interlock 3 trip counter
1	4	86	2	R	1	–	UINT16	N	DI interlock 4 trip counter
1	4	88	2	R	1	–	UINT16	N	DI interlock 5 trip counter
1	4	90	2	R	1	–	UINT16	N	DI interlock 6 trip counter
1	4	92	2	R	1	–	UINT16	N	DI interlock 7 trip counter
1	4	94	2	R	1	–	UINT16	N	DI interlock 8 trip counter
1	4	96	2	R	1	–	UINT16	N	DI interlock 9 trip counter
1	4	98	2	R	1	–	UINT16	N	DI interlock 10 trip counter
1	4	100	2	R	1	–	UINT16	N	DI interlock 11 trip counter
1	4	102	2	R	1	–	UINT16	N	DI interlock 12 trip counter
1	4	104–150	8	–	–	–	–	–	Reserved
1	4	152	2	R	1	–	UINT16	N	Calculator output 1
1	4	154	2	R	1	–	UINT16	N	Calculator output 2
1	4	156	2	R	1	–	UINT16	N	Motor stop error detection trip counter
1	4	158	2	R	1	–	UINT16	N	Logic test interrupted trip counter
1	4	160	2	R	1	–	UINT16	N	Stucked reset key trip counter

Motor Protection Functions

What's in This Chapter

Thermal Overload Protection

The table lists the thermal overload protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	0	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	3	Y	Function setting
1	5	2	2	RW	0.01	–	UINT16	100–150 (step 5)	115	Y	Service factor
1	5	4	2	RW	1	–	UINT16	5–40 (step 5)	10	Y	Trip class
1	5	6	2	RW	1	% TM[2]	UINT16	80–100 (step 5)	80	Y	Alarm level
1	5	8	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	8	Y	Reset mode[3]
1	5	10	2	RW	1	% TM[2]	UINT16	30–95 (step 5)	90	Y	Thermal reset level
1	5	12	2	RW	1	% TM[2]	UINT16	5–100 (step 5)	90	Y	Start inhibit level
1	5	14	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Cool down function
1	5	16	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Cool down time
1	5	18	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Pause function
1	5	20	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Pause time
1	5	22	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Block function
1	5	24	2	RW	1	% TM[2]	UINT16	80–95 (step 5)	80	Y	Block level
1	5	26	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Block time
1	5	28	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Auxiliary fan
1	5	30	6	–	–	–	–	–	–	–	Reserved

2. %TM = % of thermal memory
3. If the Auto reset mode is selected, you cannot configure any other reset modes.

Stalled Rotor Protection

The table lists the stalled rotor protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	36	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	5	38	2	RW	1	%IFLC[4]	UINT16	50–1000 (step 1)	200	Y	Pickup
1	5	40	2	RW	0.1	s	UINT16	1–60000 (step 1)	20	Y	Time delay
1	5	42	2	RW	1	%IFLC[4]	UINT16	50–1000 (step 1)	200	Y	Alarm level
1	5	44	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	46	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset Delay

Locked Rotor Protection

The table lists the locked rotor protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	48	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	5	50	2	RW	1	%IFLC[4]	UINT16	150–1000 (step 1)	200	Y	Pickup
1	5	52	2	RW	0.1	s	UINT16	1–60000 (step 1)	100	Y	Time delay
1	5	54	2	RW	1	%IFLC[4]	UINT16	150–1000 (step 1)	200	Y	Alarm level
1	5	56	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	58	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto–Reset delay

4. %IFLC = % of full load current

Current Protection Settings

What's in This Chapter

Definite Time Overcurrent Protection

The table lists the definite time overcurrent protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	60	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	5	62	2	RW	1	%IFLC[5]	UINT16	20–1000 (step 1)	110	Y	Pickup
1	5	64	2	RW	0.1	s	UINT16	1–60000 (step 1)	300	Y	Time delay during motor start (T_pS)
1	5	66	2	RW	0.1	s	UINT16	1–60000 (step 1)	200	Y	Time delay during motor run (T_pR)
1	5	68	2	RW	1	% Pickup	UINT16	20–1000 (step 1)	110	Y	Alarm level
1	5	70	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	72	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	5	74	2	–	–	–	–	–	–	–	Reserved

Normal Inverse Overcurrent Protection

The table lists the normal inverse overcurrent protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	76	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	5	78	2	RW	1	%IFLC[5]	UINT16	20–1000 (step 1)	50	Y	Pickup
1	5	80	2	RW	0.1	s	UINT16	1–200 (step 1)	1	Y	Time delay (TMS)
1	5	82	2	RW	1	%IFLC[5]	UINT16	20–1000 (step 1)	50	Y	Alarm level
1	5	84	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode

5. %IFLC = % of full load current

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	86	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	5	88	2	–	–	–	–	–	–	–	Reserved
(1) %IFLC = % of full load current											

Short Time Overcurrent Protection

The table lists the short time overcurrent protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	90	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	5	92	2	RW	1	%IFLC[6]	UINT16	100–1000 (step 1)	100	Y	Pickup
1	5	94	2	RW	0.01	s	UINT16	5–1000 (step 1)	5	Y	Time delay
1	5	96	2	RW	1	%IFLC[6]	UINT16	100–1000 (step 1)	100	Y	Alarm level
1	5	98	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	100	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	5	102	2	–	–	–	–	–	–	–	Reserved

Calculated Ground Fault

The table lists the calculated ground fault data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	104	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	5	106	2	RW	1	%IFLC[6]	UINT16	10–500 (step 1)	20	Y	Pickup
1	5	108	2	RW	0.10	s	UINT16	5–60000 (step 1)	20	Y	Time delay
1	5	110	2	RW	1	%IFLC[6]	UINT16	10–500 (step 1)	20	Y	Alarm level

6. %IFLC = % of full load current

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	112	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	114	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	5	116	2	–	1	–	UINT16	• 0: Disable • 1: Enable	0	N	Function while motor starting

Measured Ground Fault

The table lists the measured ground fault data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	118	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	5	120	2	RW	1	mA	UINT16	20–20000 (step 10)	30	Y	Pickup
1	5	122	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	5	124	2	RW	1	mA	UINT16	20–20000 (step 10)	30	Y	Alarm level
1	5	126	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	128	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	5	130	2	–	1	–	UINT16	• 0: Disable • 1: Enable	0	N	Function while motor starting

Phase Under Current Protection

The table lists the phase under current protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	132	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	1	Y	Function setting
1	5	134	2	RW	1	%IFLC[7]	UINT16	15–100 (step 1)	50	Y	Pickup
1	5	136	2	RW	0.1	s	UINT16	1–60000 (step 1)	100	Y	Time delay
1	5	138	2	RW	1	%IFLC[7]	UINT16	15–100 (step 1)	50	Y	Alarm level
1	5	140	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	8	Y	Reset mode
1	5	142	2	RW	0.1	s	UINT16	0–60000 (step 1)	50	Y	Auto-Reset delay
1	5	144	4	–	–	–	–	–	–	–	Reserved

Current Imbalance Protection

The table lists the current imbalance protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	148	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	3	Y	Function setting
1	5	150	2	RW	1	%	UINT16	5–100 (step 5)	20	Y	Pickup
1	5	152	2	RW	0.1	s	UINT16	1–60000 (step 1)	50	Y	Time delay
1	5	154	2	RW	1	%	UINT16	5–100 (step 5)	20	Y	Alarm level
1	5	156	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	158	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	5	160	2	–	–	–	–	–	–	–	Reserved

7. %IFLC = % of full load current

Current Phase Loss Protection

The table lists the current phase loss protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	162	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	5	164	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	5	166	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	168	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	5	170	2	–	–	–	–	–	–	–	Reserved

Current Phase Reversal Protection

The table lists the current phase reversal protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	5	172	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	5	174	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	5	176	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	5	178	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	5	180	2	–	–	–	–	–	–	–	Reserved

Voltage Protection Settings

What's in This Chapter

Phase Under Voltage Protection

The table lists the phase under voltage protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	0	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	6	2	2	RW	1	%Vn	UINT16	20–100 (step 1)	80	Y	Pickup
1	6	4	2	RW	0.1	s	UINT16	1–60000 (step 1)	100	Y	Time delay
1	6	6	2	RW	1	%Vn	UINT16	20–100 (step 1)	80	Y	Alarm level
1	6	8	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	8	Y	Reset mode
1	6	10	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	12	4	–	–	–	–	–	–	–	Reserved

Phase Over Voltage Protection

The table lists the phase under voltage protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	16	2	RW	1	–	UINT16	• 0 - Disable • 1 - Alarm • 2 - Trip • 3 - Alarm and Trip	2	Y	Function setting
1	6	18	2	RW	1	%Vn	UINT16	101–130 (step 1)	110	Y	Pickup
1	6	20	2	RW	0.1	s	UINT16	1–60000 (step 1)	50	Y	Time delay
1	6	22	2	RW	1	%Vn	UINT16	101–130 (step 1)	110	Y	Alarm level
1	6	24	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	6	26	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	28	2	–	–	–	–	–	–	–	Reserved

Voltage Imbalance Protection

The table lists the voltage imbalance protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	40	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	3	Y	Function setting
1	6	42	2	RW	1	%Vn	UINT16	5–50 (step 5)	10	Y	Pickup
1	6	44	2	RW	0.1	s	UINT16	1–60000 (step 1)	100	Y	Time delay
1	6	46	2	RW	1	%Vn	UINT16	5–50 (step 5)	10	Y	Alarm level
1	6	48	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	6	50	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	52	2	–	–	–	–	–	–	–	Reserved

Voltage Phase Loss Protection

The table lists the voltage phase loss protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	30	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	6	32	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	6	34	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	6	36	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	38	2	–	–	–	–	–	–	–	Reserved

Voltage Phase Reversal Protection

The table lists the voltage phase reversal protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	54	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	2	Y	Function setting
1	6	56	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	6	58	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	6	60	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	62	2	–	–	–	–	–	–	–	Reserved

Power Protection Settings

What's in This Chapter

Under Frequency Protection

The table lists the under frequency protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	64	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	6	66	2	RW	1	%F[8]	UINT16	90–100 (step 1)	94	Y	Pickup
1	6	68	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	6	70	2	RW	1	%F[8]	UINT16	90–100 (step 1)	94	Y	Alarm level
1	6	72	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communica-tion • Bit 3: Auto	3	Y	Reset mode
1	6	74	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	76	2	–	–	–	–	–	–	–	Reserved

Over Frequency Protection

The table lists the over frequency protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	78	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	6	80	2	RW	1	%F[8]	UINT16	100–110 (step 1)	105	Y	Pickup
1	6	82	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	6	84	2	RW	1	%F[8]	UINT16	100–110 (step 1)	105	Y	Alarm level
1	6	86	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communica-tion • Bit 3: Auto	3	Y	Reset mode

8. %F = % of nominal frequency

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	88	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	90	2	–	–	–	–	–	–	–	Reserved

Under Power Protection

The table lists the under power protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	92	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	6	94	2	RW	1	%P	UINT16	20–1000 (step 1)	60	Y	Pickup[9]
1	6	96	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	6	98	2	RW	1	%P	UINT16	20–1000 (step 1)	60	Y	Alarm level[9]
1	6	100	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communica-tion • Bit 3: Auto	3	Y	Reset mode
1	6	102	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	104	2	–	–	–	–	–	–	–	Reserved

9. %P = % of nominal power.

   The nominal power (Pn) is calculated by the LTMT main unit from the system settings: Pn = VT primary * Full load current.

   In case of two-speed motor starters, the nominal power is:

   - Pn1 = VT primary * Full load current, when the motor runs in speed 1 or low speed
   - Pn2 = VT primary * Speed 2 Full load current, when the motor runs in speed 2 or high speed

Over Power Protection

The table lists the over power protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	106	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	6	108	2	RW	1	%P[10]	UINT16	20–1000 (step 1)	110	Y	Pickup
1	6	110	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	6	112	2	RW	1	%P[10]	UINT16	20–1000 (step 1)	110	Y	Alarm level
1	6	114	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communica-tion • Bit 3: Auto	3	Y	Reset mode
1	6	116	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	118	2	–	–	–	–	–	–	–	Reserved

Under Power Factor Protection

The table lists the under power factor protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	6	120	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	6	122	2	RW	0.1-0	PF	UINT16	40–100 (step 1)	60	Y	Pickup
1	6	124	2	RW	0.1	s	UINT16	1–60000 (step 1)	1	Y	Time delay
1	6	126	2	RW	0.1-0	PF	UINT16	40–100 (step 1)	60	Y	Alarm level
1	6	128	2	RW	1	–	BITMAP	• Bit 0: Reset key	3	Y	Reset mode

10. %P = % of nominal power.

The nominal power (Pn) is calculated by the LTMT main unit from the system settings: Pn = VT primary * Full load current.

In case of two-speed motor starters, the nominal power is:

- Pn1 = VT primary * Full load current, when the motor runs in speed 1 or low speed
- Pn2 = VT primary * Speed 2 Full load current, when the motor runs in speed 2 or high speed

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
								• Bit 1: DI • Bit 2: Communica-tion • Bit 3: Auto			
1	6	130	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	6	132	2	–	–	–	–	–	–	–	Reserved

Motor Control Function Settings

What's in This Chapter

Excessive Start Time Protection

The table lists the excessive start time protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	0	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Function setting
1	7	2	2	RW	0.1	s	UINT16	1–60000 (step 1)	100	Y	Time delay
1	7	4	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	7	6	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	7	8	2	RW	0.1	% IFLC[11]	UINT16	80–300 (step 1)	100	Y	Run Threshold
1	7	10	4	RW	–	–	–	–	–	–	Reserved

Voltage Dip

The table lists the voltage dip data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	14	2	RW	1	–	UINT16	• 0: Disable • 1: Load shedding • 2: Auto restart	0	Y	Function setting
1	7	16	2	RW	1	%Vn	UINT16	20–90 (step 5)	90	Y	Voltage dip
1	7	18	2	RW	1	%Vn	UINT16	20–95 (step 5)	95	Y	Voltage restoration
1	7	20	2	RW	1	s	UINT16	0–9999 (step 1)	2	Y	Voltage dip restart timeout
1	7	22	2	RW	1	s	UINT16	0–301 (step 1)	4	Y	Delayed restart timeout
1	7	24	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Bypass STOP DI
1	7	26	2	RW	1	s	UINT16	0–4 (step 1)	2	Y	Immediate restart timeout
1	7	28	2	RW	1	s	UINT16	1–9999 (step 1)	10	Y	Load shedding timeout
1	7	30	2	–	–	–	–	–	–	–	Reserved

11. %IFLC = % of full load current

Maximum Number of Starts

The table lists the maximum number of starts data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	32	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	1	Y	Function setting
1	7	34	2	RW	1	–	UINT16	1–30 (step 1)	6	Y	Permissive starts
1	7	36	2	RW	1	min	UINT16	15–60 (step 1)	30	Y	Reference time
1	7	38	2	RW	1	min	UINT16	1–120 (step 1)	5	Y	Inhibit period
1	7	40	2	RW	1	min	UINT16	0–120 (step 1)	0	Y	Time between starts
1	7	42	6	–	–	–	–	–	–	–	Reserved

Motor Stop Error Detection

The table lists the motor stop error detection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	48	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Function setting
1	7	50	2	RW	0.1	s	UINT16	1–60000 (step 1)	10	Y	Time delay
1	7	52	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	7	54	4	RW	–	–	–	–	–	–	Reserved

Device Internal Status

The table lists the device internal status for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	58	2	RW	0.1	s	UINT16	1–60000 (step 1)	10	Y	Time delay
1	7	59	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	60	2	RW	–	–	UINT16	• 0 - Disable • 1 - Enable	1	N	Internal temperature alarm
1	7	61	2	–	–	–	–	–	–	–	Reserved

Communication Loss

The table lists the communication loss data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	68	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	7	70	2	RW	0.1	s	UINT16	1–60000 (step 1)	10	Y	Time delay
1	7	72	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	7	74	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	7	76	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Trip only in remote mode

Block Output

The table lists the block output data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	96	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Function setting
1	7	98	2	RW	0.01	s	UINT16	0–60000 (step 1)	0	Y	Contactor or Breaker open time
1	7	100	4	–	–	–	–	–	–	–	Reserved

Anti-Backspin Timer Protection

The table lists the anti-backspin timer protection data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	104	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	0	Y	Function setting
1	7	106	2	RW	1	s	UINT16	0–60000 (step 1)	0	Y	Time delay
1	7	108	4	–	–	–	–	–	–	–	Reserved

HMI Communication Loss

The table lists the HMI communication loss data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	7	107	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	7	109	2	RW	0.1	s	UINT16	1–60000 (step 1)	10	Y	Time delay
1	7	111	2	RW	1	–	BITMAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode
1	7	113	2	RW	0.1	s	UINT16	0–60000 (step 1)	0	Y	Auto-Reset delay
1	7	115	2	–	–	–	–	–	–	–	Reserved

Digital Input Interlock Protection Settings

Description

The order and the description of the settings for digital input 1 are valid for the other digital inputs.

Slot	Index	Byte offset	Size (in bytes)	RW	Description
1	8	0	10	RW	Digital input 1 interlock protection settings
1	8	10	10	RW	Digital input 2 interlock protection settings
1	8	20	10	RW	Digital input 3 interlock protection settings
1	8	30	10	RW	Digital input 4 interlock protection settings
1	8	40	10	RW	Digital input 5 interlock protection settings
1	8	50	10	RW	Digital input 6 interlock protection settings
1	8	60	10	RW	Digital input 7 interlock protection settings
1	8	70	10	RW	Digital input 8 interlock protection settings
1	8	80	10	RW	Digital input 9 interlock protection settings
1	8	90	10	RW	Digital input 10 interlock protection settings
1	8	100	10	RW	Digital input 11 interlock protection settings
1	8	110	10	RW	Digital input 12 interlock protection settings

Digital Input 1 Interlock Protection Settings

The table lists the digital input 1 interlock protection settings for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	8	0	2	RW	1	–	UINT16	• 0: Disable • 1: Alarm • 2: Trip • 3: Alarm and Trip	0	Y	Function setting
1	8	2	2	RW	0.1	s	UINT16	0–6000 (step 1)	0	Y	Time delay
1	8	4	2	RW	1	–	BIT-MAP	• Bit 0: Reset key • Bit 1: DI • Bit 2: Communication • Bit 3: Auto	3	Y	Reset mode

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	8	6	2	RW	0.1	s	UINT16	0–6000 (step 1)	0	Y	Auto-Reset delay
1	8	8	2	–	–	–	–	–	–	–	Reserved

General Settings

What's in This Chapter

Device Configuration

The table lists the device configuration data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	9	0	2	RW	1	–	UINT16	1–15 (step 1)	8	Y	LTMTCT/ LTMTCTV Sensor Module Type, page 97
1	9	2	2	–	–	–	–	–	–	–	Reserved
1	9	4	2	RW	1	–	UINT16	0–8 (step 1)	0	Y	LTMT Expansion Unit 1 Type, page 98
1	9	6	2	–	–	–	–	–	–	–	Reserved
1	9	8	2	RW	1	–	UINT16	0–8 (step 1)	0	Y	LTMT Expansion Unit 2 Type, page 98
1	9	10	2	–	–	–	–	–	–	–	Reserved
1	9	12	2	RW	1	–	UINT16	0–8 (step 1)	0	Y	LTMT Expansion Unit 3 Type, page 98
1	9	14	2	–	–	–	–	–	–	–	Reserved
1	9	16	2	RW	1	–	UINT16	0–8 (step 1)	0	Y	LTMT Expansion Unit 4 Type, page 98
1	9	18	2	–	–	–	–	–	–	–	Reserved
1	9	20	2	RW	1	–	UINT16	0–8 (step 1)	0	Y	LTMT Expansion Unit 5 Type, page 98
1	9	22	2	–	–	–	–	–	–	–	Reserved
1	9	24	2	RW	1	–	UINT16	0–2 (step 1)	0	Y	LTMT main unit temperature sensor type[12]: • 0: None • 1: PT100 • 2: Binary PTC
1	9	26	8	–	–	–	–	–	–	–	Reserved

LTMTCT/LTMTCTV Sensor Module Type

Register value	Reference	Sensor module	Current range
0	–	None	–
1–2	–	Reserved	–
3	LTMTCT3T	LTMTCT horizontal module	0.3–3 A
4	LTMTCTV3T	LTMTCTV horizontal module	0.3–3 A
5–6	–	Reserved	–
7	LTMTCT25T	LTMTCT horizontal module	2.5–25 A
8	LTMTCTV25T	LTMTCTV horizontal module	2.5–25 A
9–10	–	Reserved	–
11	LTMTCT100T	LTMTCT horizontal module	10–100 A
12	LTMTCTV100T	LTMTCTV horizontal module	10–100 A

12. If the Main Unit Temperature value is set to None, the Control Panel operations will not be available for configuration.

Register value	Reference	Sensor module	Current range
13–14	–	Reserved	–
15	LTMTCTV3UT	LTMTCTV horizontal module for UL applications	0.3–3 A
16	LTMTCTV25UT	LTMTCTV horizontal module for UL applications	2.5–25 A
17	LTMTCTV100UT	LTMTCTV horizontal module for UL applications	10–100 A

LTMT Expansion Unit Type

Register value	Reference	Expansion unit	DI rating
0	–	None	–
1	LTMTIN42FM	4 DI and 2 DO	100/240 Vac/Vdc
2	LTMTIN42BD	4 DI and 2 DO	24 Vdc
3–8	–	Reserved	–

PROFIBUS DP Settings

The table lists the PROFIBUS DP settings for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	9	60	2	RW	1	–	UINT16	2–126 (step 1)	126	Y	Node address
1	9	62	2	RW	1	–	UINT16	0–1 (step 1)	0	Y	Endian
1	9	64	2	RW	1	–	UINT16	• 0: Default • 1: TeSys T • 2: Other	0	Y	Product profile
1	9	66	6	–	–	–	–	–	–	–	Reserved

HMI Settings

The table lists the HMI settings for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	9	48	2	RW	1	–	UINT16	1–247 (step 1)	1	Y	Node address
1	9	50	2	RW	1	–	UINT16	0: None 1: Odd 2: Even	2	Y	Parity
1	9	52	2	RW	1	bps	UINT16	0: 2400 1: 4800 2: 9600	3	Y	Baud rate

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
								3: 19200 4: 38400 5: 57600 6: 115200			
1	9	54	2	RW	1	–	UINT16	0: Default 1: Program-mable	0	Y	Control keys
1	9	56	2	RW	1	s	UINT16	1–60000 (step 1)	1	Y	Timeout
1	9	58	2	RW	1	–	BITMAP	Bit 0: • 0: Big-endi-an • 1: Little-endi-an	0	Y	Byte format

NOTE: If LTMTCUF control operator unit is connected on HMI port, HMI port must be configured as follows:

- Node address: 1
- Baud rate: 19200 bps
- Parity: Even
- Endianness: Big-endian

Real-Time Clock Settings

The table lists the Real-Time Clock (RTC) settings for the PROFIBUS DP communication.

NOTE: The clock can remembers the date and time for 12 hours without power.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	9	72	2	RW	1	–	UINT16	1–31 (step 1)	1	Y	Date
1	9	74	2	RW	1	–	UINT16	1–12 (step 1)	1	Y	Month
1	9	76	2	RW	1	–	UINT16	2000–2099 (step 1)	2016	Y	Year
1	9	78	2	RW	1	–	UINT16	0–23 (step 1)	0	Y	Hour
1	9	80	2	RW	1	–	UINT16	0–59 (step 1)	0	Y	Minute
1	9	82	2	RW	1	–	UINT16	0–59 (step 1)	0	Y	Second
1	9	84	4	–	–	–	–	–	–	–	Reserved
1	9	88	2	RW	1	–	UINT16	0–1 (step 1)	0	N	Update RTC

Starter Settings

The table lists the starter settings for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	9	90	2	RW	1	–	UINT16	0: Motor 1: Heater	0	Y	Load type
1	9	92	2	RW	1	–	UINT16	0–511 (step 1)	1	Y	Starter type
1	9	94	2	RW	1	–	UINT16	0: Disable 1: HMI 2: DI 3: Communication	0	Y	Mode selection
1	9	96	2	RW	1	–	BITMAP	Bit 0: Disable Bit 1: HMI Bit 2: DI Bit 3: Communication Bit 4: Custom logic	11	Y	Local 1 start source
1	9	98	2	RW	1	–	BITMAP	Bit 0: Disable Bit 1: HMI Bit 2: DI Bit 3: Communication Bit 4: Custom logic	0	Y	Local 2 start source
1	9	100	2	RW	1	–	BITMAP	Bit 0: Disable Bit 1: HMI Bit 2: DI Bit 3: Communication Bit 4: Custom logic	0	Y	Local 3 start source
1	9	102	2	RW	1	–	BITMAP	Bit 0: Disable Bit 1: HMI Bit 2: DI Bit 3: Communication Bit 4: Custom logic	0	Y	Remote start source
1	9	104	2	RW	1	–	BITMAP	Bit 0: Disable Bit 1: HMI Bit 2: DI Bit 3: Communication	11	Y	Local 1 stop source

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
								Bit 4: Custom logic			
1	9	106	2	RW	1	–	BITMAP	Bit 0: Disable Bit 1: HMI Bit 2: DI Bit 3: Communication Bit 4: Custom logic	0	N	Local 2 stop source
1	9	108	2	RW	1	–	BITMAP	Bit 0: Disable Bit 1: HMI Bit 2: DI Bit 3: Communication Bit 4: Custom logic	0	Y	Local 3 stop source
1	9	110	2	RW	1	–	BITMAP	Bit 0: Disable Bit 1: HMI Bit 2: DI Bit 3: Communication Bit 4: Custom logic	0	N	Remote stop source
1	9	112	2	RW	1	–	UINT16	0: Momentary 1: Permanent	0	Y	Local DI start input
1	9	114	2	RW	1	–	UINT16	0: Momentary 1: Permanent	0	Y	Remote DI start input
1	9	116	2	RW	1	–	UINT16	0: Momentary 1: Maintained	0	Y	Custom start input
1	9	118	2	RW	1	–	UINT16	0: Bump 1: Bumpless	0	Y	Mode transfer
1	9	120	2	RW	1	–	UINT16	0: Momentary 1: Maintained	0	Y	Communication start input
1	9	122	4	RW	–	–	UINT16	–	–	–	Reserved
1	9	126	2	RW	1	–	– UINT16	0: Disable 1: Enable	0	N	Change direction
1	9	128	2	RW	0.0-1	s	UINT16	1–60000 (step 1)	50	Y	Feedback response time
1	9	130	2	RW	0.0-1	s	UINT16	1–60000 (step 1)	50	Y	Motor current sensing time
1	9	132	2	RW	0.0-1	s	UINT16	1–60000 (step 1)	6000	Y	Interlocking time
1	9	134	2	RW	0.0-1	s	UINT16	1–60000 (step 1)	1000	Y	Time in star
1	9	136	2	RW	0.0-1	s	UINT16	1–60000 (step 1)	30	Y	Changeover time

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	9	138	2	RW	0.0-1	s	UINT16	1–60000 (step 1)	1	Y	Main contactor turn off time
1	9	140	2	RW	0.0-1	s	UINT16	1–60000 (step 1)	1	Y	Capacitor control time
1	9	142	6	RW	–	–	–	–	–	–	Reserved
1	9	148	2	RW	1	–	UINT16	0: Three phase 1: Single phase	0	Y	Number of phases
1	9	150	2	RW	1	–	UINT16	0: DI+Current based 1: Current based	1	Y	Stop detection
1	9	152	2	RW	1	–	UINT16	0: Disable 1: Enable	0	Y	Forced start function

System Settings

The table lists the system settings for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	9	154	2	RW	1	A	UINT16	1–1000 (step 1)	1	Y	Phase CT primary
1	9	156	2	RW	1	A	UINT16	1–5 (step 4)	1	Y	Phase CT secondary
1	9	158	4	–	–	–	–	–	–	–	Reserved
1	9	162	2	RW	1	A	UINT16	1–1000 (step 1)	1	Y	Speed 2 CT primary
1	9	164	2	RW	1	A	UINT16	1–5 (step 4)	1	Y	Speed 2 CT secondary
1	9	166	6	–	–	–	–	–	–	–	Reserved
1	9	172	2	RW	0.1	V	UINT16	1100–6900 (step 1)	4150	Y	Nominal Voltage
1	9	174	2	RW	1	–	UINT16	• 0: 50 Hz • 1: 60 Hz	0	Y	Nominal frequency
1	9	176	2	RW	1	–	UINT16	• 0: L123 • 1: L132	0	Y	Phase rotation
1	9	178	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	1	Y	Voltage input[13][14]
1	9	180	2	–	–	–	–	–	–	–	Reserved
1	9	182	2	RW	0.1	A	UINT16	1–10000 (step 1)	25	Y	Full load current
1	9	184	2	RW	0.1	A	UINT16	1–10000 (step 1)	25	Y	Speed 2 full load current
1	9	186	2	RW	1	–	UINT16	1–10 (step 1)	1	N	Phase CT secondary passes

13. Parameter applicable only for LTMTCTV sensor modules.
14. If the voltage input parameter is disabled, TeSys Tera system will not provide voltage protections and measurements.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	9	188	2	RW	1	–	UINT16	1–10 (step 1)	1	N	Speed 2 phase secondary passes
1	9	190	6	–	–	–	–	–	–	–	Reserved
1	9	196	2	RW	1	–	UINT16	• 0: Disable • 1: Enable	1	Y	Test mode
1	9	198	2	RW	1	–	UINT16	• 0: No • 1: Yes	0	Y	Bypass interlocks during test

Communication Parameters

The table lists the communication parameters for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	Unit	Type	Parameter name
1	10	0	1	R	–	Byte	Slave address
1	10	1	1	R	–	Byte	Baud rate • 0: 12 Mbps • 1: 6 Mbps • 2: 3 Mbps • 3: 1.5 Mbps • 4: 500 Kbps • 5: 187.5 Kbps • 6: 93.75 Kbps • 7: 45.45 Kbps • 8: 19.2 Kbps • 9: 9.6 Kbps
1	10	2	2	–	–	–	Reserved

Data Logs

What's in This Chapter

Trip Logs

Description

The last 20 encountered trips are recorded by the LTMT main unit.

Each trip log is composed of 64 bytes. The data of each trip Logs are organized as the data of Trip Log 1 Data, page 105.

Slot	Index	Byte offset	Size (in bytes)	Trip Log
1	11	0	64	Trip log 1
		64	64	Trip log 2
		128	64	Trip log 3
1	12	0	64	Trip log 4
		64	64	Trip log 5
		128	64	Trip log 6
1	13	0	64	Trip log 7
		64	64	Trip log 8
		128	64	Trip log 9
1	14	0	64	Trip log 10
		64	64	Trip log 11
		128	64	Trip log 12
1	15	0	64	Trip log 13
		64	64	Trip log 14
		128	64	Trip log 15
1	16	0	64	Trip log 16
		64	64	Trip log 17
		128	64	Trip log 18
1	17	0	64	Trip log 19
		64	64	Trip log 20

Trip Log 1 Data

Slot	Index	Byte off-set	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	11	0	8	R	–	–	UINT16	Y	Date and Time, page 60
1	11	8	2	R	–	–	UINT16	Y	Trip Code, page 138
1	11	10	2	R	1	A	UINT16	Y	Thermal memory
1	11	12	4	R	0.001	A	UINT32	Y	L1 RMS current
1	11	16	4	R	0.001	A	UINT32	Y	L2 RMS current
1	11	20	4	R	0.001	A	UINT32	Y	L3 RMS current
1	11	24	4	R	0.001	A	UINT32	Y	Calculated earth current
1	11	28	4	R	0.001	A	UINT32	Y	Measured earth current
1	11	32	2	R	0.01	%	UINT16	Y	Current imbalance
1	11	34	2	R	1	–	UINT16	Y	Current phase sequence

Slot	Index	Byte off-set	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	11	36	2	R	0.1	V	UINT16	Y	L1-L2 RMS voltage
1	11	38	2	R	0.1	V	UINT16	Y	L2-L3 RMS voltage
1	11	40	2	R	0.1	V	UINT16	Y	L3-L1 RMS voltage
1	11	42	2	R	1	%	UINT16	Y	Voltage imbalance
1	11	44	2	R	0.01	–	UINT16	Y	Voltage phase sequence
1	11	46	2	R	1	Hz	UINT16	Y	System Frequency
1	11	48	2	R	–	–	UINT16	Y	MSB : System PF LSB : Motor status
1	11	50	2	R	0.1	–	UINT16	Y	MSB : L1 current THD LSB : L2 current THD
1	11	52	2	R	0.1	–	UINT16	Y	MSB : L3 current THD LSB : L1 voltage THD
1	11	54	2	R	0.1	–	UINT16	Y	MSB : L2 voltage THD LSB : L3 voltage THD
1	11	56	4	R	0.001	KW	UINT32	Y	Total active power
1	11	60	4	R	–	–	–	Y	Reserved

Event Logs

Description

The last 100 events are recorded by the LTMT main unit.

Each event log is composed of 16 bytes. The data of each trip log are organized as the data of Event Log 1 Data, page 109.

Slot	Index	Byte offset	Size (in bytes)	Event log
1	18	0	16	Event log 1
		16	16	Event log 2
		32	16	Event log 3
		48	16	Event log 4
		64	16	Event log 5
		80	16	Event log 6
		96	16	Event log 7
		112	16	Event log 8
		128	16	Event log 9
		144	16	Event log 10
		160	16	Event log 11
		176	16	Event log 12
		192	16	Event log 13
		208	16	Event log 14
		224	16	Event log 15
1	19	0	16	Event log 16
		16	16	Event log 17
		32	16	Event log 18
		48	16	Event log 19
		64	16	Event log 20
		80	16	Event log 21
		96	16	Event log 22
		112	16	Event log 23
		128	16	Event log 24
		144	16	Event log 25
		160	16	Event log 26
		176	16	Event log 27
		192	16	Event log 28
		208	16	Event log 29
		224	16	Event log 30
1	20	0	16	Event log 31
		16	16	Event log 32
		32	16	Event log 33
		48	16	Event log 34
		64	16	Event log 35

Slot	Index	Byte offset	Size (in bytes)	Event log
		80	16	Event log 36
		96	16	Event log 37
		112	16	Event log 38
		128	16	Event log 39
		144	16	Event log 40
		160	16	Event log 41
		176	16	Event log 42
		192	16	Event log 43
		208	16	Event log 44
		224	16	Event log 45
1	21	0	16	Event log 46
		16	16	Event log 47
		32	16	Event log 48
		48	16	Event log 49
		64	16	Event log 50
		80	16	Event log 51
		96	16	Event log 52
		112	16	Event log 53
		128	16	Event log 54
		144	16	Event log 55
		160	16	Event log 56
		176	16	Event log 57
		192	16	Event log 58
		208	16	Event log 59
		224	16	Event log 60
1	22	0	16	Event log 61
		16	16	Event log 62
		32	16	Event log 63
		48	16	Event log 64
		64	16	Event log 65
		80	16	Event log 66
		96	16	Event log 67
		112	16	Event log 68
		128	16	Event log 69
		144	16	Event log 70
		160	16	Event log 71
		176	16	Event log 72
		192	16	Event log 73
		208	16	Event log 74
		224	16	Event log 75
1	23	0	16	Event log 76
		16	16	Event log 77

Slot	Index	Byte offset	Size (in bytes)	Event log
		32	16	Event log 78
		48	16	Event log 79
		64	16	Event log 80
		80	16	Event log 81
		96	16	Event log 82
		112	16	Event log 83
		128	16	Event log 84
		144	16	Event log 85
		160	16	Event log 86
		176	16	Event log 87
		192	16	Event log 88
		208	16	Event log 89
		224	16	Event log 90
1	24	0	16	Event log 91
		16	16	Event log 92
		32	16	Event log 93
		48	16	Event log 94
		64	16	Event log 95
		80	16	Event log 96
		96	16	Event log 97
		112	16	Event log 98
		128	16	Event log 99
		144	16	Event log 100

Event Log 1 Data

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	18	0	8	R	–	–	UINT16	Y	Date and Time, page 60
1	18	8	2	R	–	–	UINT16	Y	Event Code, page 140
1	18	10	6	R	–	–	–	Y	Reserved

Detected Internal Error Logs

Description

The last 20 detected internal errors are recorded by the LTMT main unit.

Each detected internal error log is composed of 16 bytes. The data of each detected internal error log are organized as the data of Detected Internal Error Log 1 Data, page 110.

Slot	Index	Byte offset	Size (in bytes)	Detected internal error log
1	25	0	16	Detected internal error log 1
		16	16	Detected internal error log 2
		32	16	Detected internal error log 3
		48	16	Detected internal error log 4
		64	16	Detected internal error log 5
		80	16	Detected internal error log 6
		96	16	Detected internal error log 7
		112	16	Detected internal error log 8
		128	16	Detected internal error log 9
		144	16	Detected internal error log 10
		160	16	Detected internal error log 11
		176	16	Detected internal error log 12
		192	16	Detected internal error log 13
		208	16	Detected internal error log 14
		224	16	Detected internal error log 15
1	26	0	16	Detected internal error log 16
		16	16	Detected internal error log 17
		32	16	Detected internal error log 18
		48	16	Detected internal error log 19
		64	16	Detected internal error log 20

Detected Internal Error Log 1 Data

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Svd	Parameter name
1	25	0	8	R	–	–	UINT16	Y	Date and Time, page 60
1	25	8	2	R	–	–	UINT16	Y	Detected Internal Error Code, page 156
1	25	10	6	R	–	–	–	Y	Reserved

Digital Inputs Settings

The table lists the digital inputs settings for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	27	0	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 1 trigger type
1	27	2	2	RW	1	–	UINT16	0–38 (step 1)	4	Y	Digital input 1 input source
1	27	4	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 1 validation time
1	27	6	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	1	Y	Digital input 2 trigger type
1	27	8	2	RW	1	–	UINT16	0–38 (step 1)	6	Y	Digital input 2 input source
1	27	10	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 2 validation time
1	27	12	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 3 trigger type
1	27	14	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 3 input source
1	27	16	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 3 validation time
1	27	18	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 4 trigger type
1	27	20	2	RW	1	–	UINT16	0–38 (step 1)	30	Y	Digital input 4 input source
1	27	22	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 4 validation time
1	27	24	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 5 trigger type
1	27	26	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 5 input source
1	27	28	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 5 validation time
1	27	30	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 6 trigger type
1	27	32	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 6 input source
1	27	34	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 6 validation time
1	27	36	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 7 trigger type
1	27	38	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 7 input source
1	27	40	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 7 validation time
1	27	42	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 8 trigger type
1	27	44	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 8 input source
1	27	46	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 8 validation time

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	27	48	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 9 trigger type
1	27	50	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 9 input source
1	27	52	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 9 validation time
1	27	54	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 10 trigger type
1	27	56	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 10 input source
1	27	58	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 10 validation time
1	27	60	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 11 trigger type
1	27	62	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 11 input source
1	27	64	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 11 validation time
1	27	66	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 12 trigger type
1	27	68	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 12 input source
1	27	70	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 12 validation time
1	27	72	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 13 trigger type
1	27	74	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 13 input source
1	27	76	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 13 validation time
1	27	78	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 14 trigger type
1	27	80	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 14 input source
1	27	82	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 14 validation time
1	27	84	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 15 trigger type
1	27	86	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 15 input source
1	27	88	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 15 validation time
1	27	90	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 16 trigger type
1	27	92	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 16 input source
1	27	94	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 16 validation time
1	27	96	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 17 trigger type
1	27	98	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 17 input source

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	27	100	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 17 validation time
1	27	102	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 18 trigger type
1	27	104	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 18 input source
1	27	106	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 18 validation time
1	27	108	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 19 trigger type
1	27	110	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 19 input source
1	27	112	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 19 validation time
1	27	114	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 20 trigger type
1	27	116	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 20 input source
1	27	118	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 20 validation time
1	27	120	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 21 trigger type
1	27	122	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 21 input source
1	27	124	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 21 validation time
1	27	126	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 22 trigger type
1	27	128	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 22 input source
1	27	130	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 22 validation time
1	27	132	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 23 trigger type
1	27	134	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 23 input source
1	27	136	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 23 validation time
1	27	138	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital input 24 trigger type
1	27	140	2	RW	1	–	UINT16	0–38 (step 1)	0	Y	Digital input 24 input source
1	27	142	2	RW	1	ms	UINT16	0–60000 (step 1)	10	Y	Digital input 24 validation time
1	27	144–190	2	–	–	–	–	–	–	–	Reserved

Digital Output Settings

The table lists the digital output settings for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	28	0	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 1 active type
1	28	2	2	RW	1	–	UINT16	0–65535 (step 1)	504	Y	Digital output 1 input source
1	28	4	2	RW	1	–	UINT16	0–12 (step 1)	7	Y	Digital output 1 tag
1	28	6	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 1 output type
1	28	8	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 1 pulse time
1	28	10	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 2 active type
1	28	12	2	RW	1	–	UINT16	0–65535 (step 1)	233	Y	Digital output 2 input source
1	28	14	2	RW	1	–	UINT16	0–12 (step 1)	3	Y	Digital output 2 tag
1	28	16	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 2 output type
1	28	18	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 2 pulse time
1	28	20	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 3 active type
1	28	22	2	RW	1	–	UINT16	0–65535 (step 1)	234	Y	Digital output 3 input source
1	28	24	2	RW	1	–	UINT16	0–12 (step 1)	2	Y	Digital output 3 tag
1	28	26	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 3 output type
1	28	28	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 3 pulse time
1	28	30	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 4 active type
1	28	32	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 4 input source
1	28	34	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 4 tag
1	28	36	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 4 output type
1	28	38	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 4 pulse time
1	28	40	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 5 active type
1	28	42	2	RW	1	–	UINT16	0–60000 (step 10)	0	Y	Digital output 5 input source
1	28	44	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 5 tag
1	28	46	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 5 output type

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	28	48	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 5 pulse time
1	28	50	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 6 active type
1	28	52	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 6 input source
1	28	54	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 6 tag
1	28	56	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 6 output type
1	28	58	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 6 pulse time
1	28	60	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 7 active type
1	28	62	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 7 input source
1	28	64	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 7 tag
1	28	66	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 7 output type
1	28	68	2	RW	1	ms	UINT16	0–60000 (step 1)	0	Y	Digital output 7 pulse time
1	28	24	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 8 active type
1	28	26	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 8 input source
1	28	28	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 8 tag
1	28	30	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 8 output type
1	28	32	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 8 pulse time
1	28	34	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 9 active type
1	28	36	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 9 input source
1	28	38	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 9 tag
1	28	40	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 9 output type
1	28	42	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 9 pulse time
1	28	44	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 10 active type
1	28	46	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 10 input source
1	28	48	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 10 tag
1	28	50	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 10 output type
1	28	52	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 10 pulse time

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	28	54	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 11 active type
1	28	56	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 11 input source
1	28	58	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 11 tag
1	28	60	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 11 output type
1	28	62	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 11 pulse time
1	28	64	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 12 active type
1	28	66	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 12 input source
1	28	68	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 12 tag
1	28	70	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 12 output type
1	28	72	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 12 pulse time
1	28	74	2	RW	1	–	UINT16	• 0: Active high • 1: Active low	0	Y	Digital output 13 active type
1	28	76	2	RW	1	–	UINT16	0–65535 (step 1)	0	Y	Digital output 13 input source
1	28	78	2	RW	1	–	UINT16	0–12 (step 1)	0	Y	Digital output 13 tag
1	28	80	2	RW	1	–	UINT16	• 0: Level • 1: Pulse	0	Y	Digital output 13 output type
1	28	82	2	RW	1	ms	UINT16	0–60000 (step 10)	0	Y	Digital output 13 pulse time
1	28	84	8	–	–	–	–	–	–	–	Reserved

Hysteresis Settings

The table lists the hysteresis settings for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	RW	X	Unit	Type	Range	Default value	Svd	Parameter name
1	29	0	2	RW	1	%	UINT16	3–15 (step 1)	3	Y	Current protection
1	29	2	2	RW	1	%	UINT16	3–15 (step 1)	3	Y	Voltage protection
1	29	4	2	RW	1	%	UINT16	1–15 (step 1)	3	Y	Frequency protection
1	29	6	2	RW	1	%	UINT16	3–15 (step 1)	3	Y	Power protection
1	29	8–10	2	–	–	–	–	–	–	–	Reserved

Motor Start Logs

Description

The LTMT main unit records 250 current values measured during the last motor start.

One log can be saved to serve as motor start reference log.

The last motor start log can be saved as reference log by using:

- The TeSys Tera DTM.
- A command from a PLC or DCS via the communication network.

The last motor start log and the reference log:

- Can be displayed with the TeSys Tera DTM.
- Are available for PLC or DCS via the communication network.

Two read requests of 256 bytes are necessary to read the last motor start log, and two read requests of 256 bytes are necessary to read the reference log.

Sampling Interval

The sampling interval is based on the trip class selected in the thermal overload settings.

Trip class	Sampling interval
5	20 ms
10	40 ms
15	60 ms
20	80 ms
25	100 ms
30	120 ms
35	140 ms
40	160 ms

Motor Start Log 1

Slot	Index	Byte offset	Size (in bytes)	X	Unit	Type	Svd	Parameter name
1	30	0	8	1	–	UINT16	Y	Date and Time, page 60
1	30	8	2	1	ms	UINT16	Y	Sampling interval
1	30	10	2	0.1	A	UINT16	Y	IFLC
1	30	12	2	0.1	%IFLC	UINT16	Y	Sample 1
1	30	14	2	0.1	%IFLC	UINT16	Y	Sample 2
1	30	16	2	0.1	%IFLC	UINT16	Y	Sample 3
…	…	…	…	…	…	…	…	…
1	30	238	2	0.1	%IFLC	UINT16	Y	Sample 114

Motor Start Log 2

Slot	Index	Byte offset	Size (in bytes)	X	Unit	Type	Svd	Parameter name
1	31	0	2	0.1	%IFLC	UINT16	Y	Sample 115
1	31	2	2	0.1	%IFLC	UINT16	Y	Sample 116
1	31	4	2	0.1	%IFLC	UINT16	Y	Sample 117
1	31	6	2	0.1	%IFLC	UINT16	Y	Sample 118
…	…	…	…	…	…	…	…	…
1	31	238	2	0.1	%IFLC	UINT16	Y	Sample 234

Motor Start Log 3

Slot	Index	Byte offset	Size (in bytes)	X	Unit	Type	Svd	Parameter name
1	32	0	8	0.1	%IFLC	UINT16	Y	Sample 235
1	32	2	2	0.1	%IFLC	UINT16	Y	Sample 236
…	…	…	…	…	…	…	…	…
1	32	30	2	0.1	%IFLC	UINT16	Y	Sample 250

Status Data Parameters

What's in This Chapter

Digital Input Status

The table lists the digital input status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	0	1	0.0	R	BOOL	N	Digital input 1
				0.1	R	BOOL	N	Digital input 2
				0.2	R	BOOL	N	Digital input 3
				0.3	R	BOOL	N	Digital input 4
				0.4	R	BOOL	N	Digital input 5
				0.5	R	BOOL	N	Digital input 6
				0.6	R	BOOL	N	Digital input 7
				0.7	R	BOOL	N	Digital input 8
1	33	1	1	1.0	R	BOOL	N	Digital input 9
				1.1	R	BOOL	N	Digital input 10
				1.2	R	BOOL	N	Digital input 11
				1.3	R	BOOL	N	Digital input 12
				1.4	R	BOOL	N	Digital input 13
				1.5	R	BOOL	N	Digital input 14
				1.6	R	BOOL	N	Digital input 15
				1.7	R	BOOL	N	Digital input 16
1	33	2	1	2.0	R	BOOL	N	Digital input 17
				2.1	R	BOOL	N	Digital input 18
				2.2	R	BOOL	N	Digital input 19
				2.3	R	BOOL	N	Digital input 20
				2.4	R	BOOL	N	Digital input 21
				2.5	R	BOOL	N	Digital input 22
				2.6	R	BOOL	N	Digital input 23
				2.7	R	BOOL	N	Digital input 24
1	33	3	1	3.0–3.7	–	–	–	Reserved

Digital Output Status

The table lists the digital output status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	4	1	4.0	R	BOOL	N	Digital output 1
				4.1	R	BOOL	N	Digital output 2
				4.2	R	BOOL	N	Digital output 3
				4.3	R	BOOL	N	Digital output 4
				4.4	R	BOOL	N	Digital output 5
				4.5	R	BOOL	N	Digital output 6
				4.6	R	BOOL	N	Digital output 7

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
				4.7	R	BOOL	N	Digital output 8
1	33	5	1	5.0	R	BOOL	N	Digital output 9
				5.1	R	BOOL	N	Digital output 10
				5.2	R	BOOL	N	Digital output 11
				5.3	R	BOOL	N	Digital output 12
				5.4	R	BOOL	N	Digital output 13
				5.5–5.7	–	–	–	Reserved
1	33	6	6	–	–	–	–	Reserved
1	33	7	1	7.0–7.7	–	–	–	Reserved

Reserved

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	10–11	1	–	–	–	–	Reserved

Common Trip, Alarm, and Pickup Status

The table lists the common trip, alarm, and pickup status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	28	1	28.0	R	BOOL	N	Pickup status
				28.1	R	BOOL	N	Alarm status
				28.2	R	BOOL	N	Trip status
				28.3	R	BOOL	N	Motor stop error detection
				28.4	–	–	–	Reserved
				28.5	R	BOOL	N	Block output
				28.6–28.7	–	–	–	Reserved
1	33	29	1	29.0–29.7	–	–	–	Reserved

Protection Alarm Status

The table lists the protection alarm status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	32	1	32.0	R	BOOL	N	Thermal overload alarm
				32.1	R	BOOL	N	Locked rotor alarm
				32.2	R	BOOL	N	Stalled rotor alarm
				32.3	R	BOOL	N	Definite time overcurrent alarm

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
				32.4	R	BOOL	N	Normal inverse overcurrent alarm
				32.5	R	BOOL	N	Short time overcurrent alarm
				32.6	R	BOOL	N	Calculated ground current alarm
				32.7	R	BOOL	N	Measured ground current alarm
1	33	33	1	33.0	R	BOOL	N	Phase under current alarm
				33.1	R	BOOL	N	Current imbalance alarm
				33.2	R	BOOL	N	Current phase loss alarm
				33.3	R	BOOL	N	Current phase reversal alarm
				33.4	R	BOOL	N	Phase under voltage alarm
				33.5	R	BOOL	N	Phase over voltage alarm
				33.6	R	BOOL	N	Voltage phase loss alarm
				33.7	R	BOOL	N	Voltage imbalance alarm
1	33	34	1	34.0	R	BOOL	N	Voltage phase reversal alarm
				34.1	R	BOOL	N	Under frequency alarm
				34.2	R	BOOL	N	Over frequency alarm
				34.3	–	–	–	Reserved
				34.4	R	BOOL	N	Communication loss alarm
				34.5	R	BOOL	N	Over temperature alarm
				34.6	R	BOOL	N	Under power alarm
				34.7	R	BOOL	N	Over power alarm
1	33	35	1	35.0	R	BOOL	N	Under power factor alarm
				35.1	–	–	–	Reserved
				35.2	R	BOOL	N	Device internal temperature alarm
				35.3	R	BOOL	N	HMI communication loss alarm
				35.4–35.7	–	–	–	Reserved

Protection Pickup Status

The table lists the protection pickup status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	36	1	36.0	R	BOOL	N	Thermal overload pickup
				36.1	R	BOOL	N	Locked rotor pickup
				36.2	R	BOOL	N	Stalled rotor pickup
				36.3	R	BOOL	N	Definite time overcurrent pickup
				36.4	R	BOOL	N	Normal inverse overcurrent pickup
				36.5	R	BOOL	N	Short time overcurrent pickup
				36.6	R	BOOL	N	Calculated ground current pickup

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
				36.7	R	BOOL	N	Measured ground current pickup
1	33	37	1	37.0	R	BOOL	N	Phase under current pickup
				37.1	R	BOOL	N	Current imbalance pickup
				37.2	R	BOOL	N	Current phase loss pickup
				37.3	R	BOOL	N	Current phase reversal pickup
				37.4	R	BOOL	N	Phase under voltage pickup
				37.5	R	BOOL	N	Phase over voltage pickup
				37.6	R	BOOL	N	Voltage phase loss pickup
				37.7	R	BOOL	N	Voltage imbalance pickup
1	33	38	1	38.0	R	BOOL	N	Voltage phase reversal pickup
				38.1	R	BOOL	N	Under frequency pickup
				38.2	R	BOOL	N	Over frequency pickup
				38.3	R	BOOL	N	Excessive start time pickup
				38.4	R	BOOL	N	Communication loss pickup
				38.5	R	BOOL	N	Over temperature pickup
				38.6	R	BOOL	N	Under power pickup
				38.7	R	BOOL	N	Over power pickup
1	33	39	1	39.0	R	BOOL	N	Under power factor pickup
				39.1	–	–	–	Reserved
				39.2	R	BOOL	N	Device internal pickup
				39.3	R	BOOL	N	HMI communication loss pickup
				39.4–39.7	–	–	–	Reserved

Protection Trip Status

The table lists the protection trip status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	40	1	40.0	R	BOOL	N	Thermal overload trip
				40.1	R	BOOL	N	Locked rotor trip
				40.2	R	BOOL	N	Stalled rotor trip
				40.3	R	BOOL	N	Definite time overcurrent trip
				40.4	R	BOOL	N	Normal inverse overcurrent trip
				40.5	R	BOOL	N	Short time overcurrent trip
				40.6	R	BOOL	N	Calculated ground current trip
				40.7	R	BOOL	N	Measured ground current trip
1	33	41	1	41.0	R	BOOL	N	Phase under current trip
				41.1	R	BOOL	N	Current imbalance trip
				41.2	R	BOOL	N	Current phase loss trip
				41.3	R	BOOL	N	Current phase reversal trip
				41.4	R	BOOL	N	Phase under voltage trip
				41.5	R	BOOL	N	Phase over voltage trip
				41.6	R	BOOL	N	Voltage phase loss trip
				41.7	R	BOOL	N	Voltage imbalance trip
1	33	42	1	42.0	R	BOOL	N	Voltage phase reversal trip
				42.1	R	BOOL	N	Under frequency trip
				42.2	R	BOOL	N	Over frequency trip
				42.3	R	BOOL	N	Excessive start time trip
				42.4	R	BOOL	N	Communication loss trip
				42.5	R	BOOL	N	Over temperature trip
				42.6	R	BOOL	N	Under power trip
				42.7	R	BOOL	N	Over power trip
1	33	43	1	43.0	R	BOOL	N	Under power factor trip
				43.1	–	–	–	Reserved
				43.2	R	BOOL	N	Device internal trip
				43.3	R	BOOL	N	HMI communication loss trip
				43.4–43.7	–	–	–	Reserved

Interlock Protection Alarm Status

The table lists the interlock protection alarm status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	44	1	44.0	R	BOOL	N	Interlock 1 alarm
				44.1	R	BOOL	N	Interlock 2 alarm

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
				44.2	R	BOOL	N	Interlock 3 alarm
				44.3	R	BOOL	N	Interlock 4 alarm
				44.4	R	BOOL	N	Interlock 5 alarm
				44.5	R	BOOL	N	Interlock 6 alarm
				44.6	R	BOOL	N	Interlock 7 alarm
				44.7	R	BOOL	N	Interlock 8 alarm
1	33	45	1	45.0	R	BOOL	N	Interlock 9 alarm
				45.1	R	BOOL	N	Interlock 10 alarm
				45.2	R	BOOL	N	Interlock 11 alarm
				45.3	R	BOOL	N	Interlock 12 alarm
				45.4–45.7	–	–	–	Reserved

Interlock Protection Pickup Status

The table lists the interlock protection pickup status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	46	1	46.0	R	BOOL	N	Interlock 1 pickup
				46.1	R	BOOL	N	Interlock 2 pickup
				46.2	R	BOOL	N	Interlock 3 pickup
				46.3	R	BOOL	N	Interlock 4 pickup
				46.4	R	BOOL	N	Interlock 5 pickup
				46.5	R	BOOL	N	Interlock 6 pickup
				46.6	R	BOOL	N	Interlock 7 pickup
				46.7	R	BOOL	N	Interlock 8 pickup
1	33	47	1	47.0	R	BOOL	N	Interlock 9 pickup
				47.1	R	BOOL	N	Interlock 10 pickup
				47.2	R	BOOL	N	Interlock 11 pickup
				47.3	R	BOOL	N	Interlock 12 pickup
				47.4–47.7	–	–	–	Reserved

Interlock Protection Trip Status

The table lists the interlock protection trip status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	48	1	48.0	R	BOOL	N	Interlock 1 trip
				48.1	R	BOOL	N	Interlock 2 trip
				48.2	R	BOOL	N	Interlock 3 trip
				48.3	R	BOOL	N	Interlock 4 trip
				48.4	R	BOOL	N	Interlock 5 trip

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
				48.5	R	BOOL	N	Interlock 6 trip
				48.6	R	BOOL	N	Interlock 7 trip
				48.7	R	BOOL	N	Interlock 8 trip
1	33	49	1	49.0	R	BOOL	N	Interlock 9 trip
				49.1	R	BOOL	N	Interlock 10 trip
				49.2	R	BOOL	N	Interlock 11 trip
				49.3	R	BOOL	N	Interlock 12 trip
				49.4–49.7	–	–	–	Reserved

Permissive Command Status

The table lists the permissive command status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	68	1	68.0	R	BOOL	N	Status - Permissive command 1
				68.1	R	BOOL	N	Status - Permissive command 2
				68.2	R	BOOL	N	Status - Permissive command 3
				68.3	R	BOOL	N	Status - Permissive command 4
				68.4	R	BOOL	N	Status - Permissive command 5
				68.5	R	BOOL	N	Status - Permissive command 6
				68.6	R	BOOL	N	Status - Permissive command 7
				68.7	R	BOOL	N	Status - Permissive command 8
1	33	69	1	69.0–69.7	–	–	–	Reserved
1	33	70	1	70.0–70.7	–	–	–	Reserved
1	33	71	1	71.0–71.7	–	–	–	Reserved

Device Internal Status (LTMT Main Unit)

The table lists the device internal status (LTMT main unit) data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	76	1	76.0	R	BOOL	N	Sensor module communication error detected
				76.1	R	BOOL	N	Expansion communication error detected
				76.2	R	BOOL	N	HMI communication error detected
				76.3	R	BOOL	N	EEPROM interface error detected

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
				76.4	R	BOOL	N	EEPROM checksum error detected
				76.5	R	BOOL	N	Configuration error detected
				76.6	R	BOOL	N	PROFIBUS DP interface error detected
				76.7	R	BOOL	N	Internal temperature major error detected
1	33	77	1	77.0	R	BOOL	N	Watchdog timeout detected
				77.1	R	BOOL	N	Low Battery detected
				77.2–77.3	–	–	–	Reserved
				77.4	R	BOOL	N	Energy register overflow
				77.5	R	BOOL	N	Error detected during LTMT expansion unit initialization
				77.6	R	BOOL	N	RTC initialization error detected
				77.7	R	BOOL	N	Internal temperature minor error detected
1	33	78	1	78.0–78.7	–	–	–	Reserved
1	33	79	1	79.0–79.7	–	–	–	Reserved

Device Internal Status (LTMTCT/LTMTCTV Sensor Module)

The table lists the device internal error detection setting (LTMTCT/LTMTCTV sensor module) data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	80	1	80.0	R	BOOL	N	Watchdog timeout detected
				80.1	R	BOOL	N	ADC conversion error detected
				80.2	R	BOOL	N	Flash error detected
				80.3	–	–	–	Reserved
				80.4	R	BOOL	N	Voltage configuration not detected
				80.5	–	–	–	Reserved
				80.6	R	BOOL	N	Calibration error detected
				80.7	R	BOOL	N	VL1 measurement error detected
1	33	81	1	81.0	R	BOOL	N	VL2 measurement error detected
				81.1	R	BOOL	N	VL3 measurement error detected
				81.2	R	BOOL	N	IL1 low gain measurement error detected
				81.3	R	BOOL	N	IL1 high gain measurement error detected
				81.4	R	BOOL	N	IL2 low gain measurement error detected
				81.5	R	BOOL	N	IL2 high gain measurement error detected
				81.6	R	BOOL	N	IL3 low gain measurement error detected

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
				81.7	R	BOOL	N	IL3 high gain measurement error detected
1	33	82	1	82.0–82.7	–	–	–	Reserved
1	33	83	1	83.0–83.7	–	–	–	Reserved

Communication Status

The table lists the communication status data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte.Bit	RW	Type	Svd	Parameter name
1	33	84	1	84.0	R	BOOL	N	Modbus RTU or PROFIBUS DP port – No communication
				84.1	R	BOOL	N	HMI port – No communication
				84.2–84.7	–	–	–	Reserved
1	33	85	1	85.0–85.7	–	–	–	Reserved
1	33	86	1	86.0–86.7	–	–	–	Reserved
1	33	87	1	87.0–87.7	–	–	–	Reserved

Identification and Monitoring (I&M) Data

What's in This Chapter

Overview

The table list the different I&M headers. To read I&M data from the device, write the I&M header atleast once after the device is power ON.

Slot	Index	Size (in bytes)	Data	I&M number
0	255	4	0x08,0x00,0xFD,0xE8	I&M0, page 131
0	255	4	0x08,0x00,0xFD,0xE8	I&M1, page 133
0	255	4	0x08,0x00,0xFD,0xE8	I&M2, page 135
0	255	4	0x08,0x00,0xFD,0xE8	I&M3, page 136

I&M0 Header Data

The table lists the I&M0 header data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte. Bit	X	RW	Unit	Type	De-fault value	Svd	Parameter name
0	255	0-9	10	0.0	1	R	–	UINT8	0	Y	I&M0 header
				1.0	1	R	–	UINT8	0	Y	
				2.0	1	R	–	UINT8	0	Y	
				3.0	1	R	–	UINT8	0	Y	
				4.0	1	R	–	UINT8	0	Y	
				5.0	1	R	–	UINT8	0	Y	
				6.0	1	R	–	UINT8	0	Y	
				7.0	1	R	–	UINT8	0	Y	
				8.0	1	R	–	UINT8	0	Y	
				9.0	1	R	–	UINT8	0	Y	
0	255	10-11	2	10.0	1	R	–	UINT8	0X01	Y	Manufacturer ID
				11.0	1	R	–	UINT8	0X29	Y	
0	255	12-31	20	12.0	1	R	–	UINT8	L	Y	Order ID
				13.0	1	R	–	UINT8	T	Y	
				14.0	1	R	–	UINT8	M	Y	
				15.0	1	R	–	UINT8	T	Y	
				16.0	1	R	–	UINT8	P	Y	
				17.0	1	R	–	UINT8	X	Y	
				18.0	1	R	–	UINT8	X	Y	
				19.0	1	R	–	UINT8	0X20	Y	
				20.0	1	R	–	UINT8	0X20	Y	
				21.0	1	R	–	UINT8	0X20	Y	
				22.0	1	R	–	UINT8	0X20	Y	
				23.0	1	R	–	UINT8	0X20	Y	
				24.0	1	R	–	UINT8	0X20	Y	
				25.0	1	R	–	UINT8	0X20	Y	
				26.0	1	R	–	UINT8	0X20	Y	
				27.0	1	R	–	UINT8	0X20	Y	
				28.0	1	R	–	UINT8	0X20	Y	
				29.0	1	R	–	UINT8	0X20	Y	

Slot	Index	Byte offset	Size (in bytes)	Byte. Bit	X	RW	Unit	Type	De-fault value	Svd	Parameter name
				30.0	1	R	–	UINT8	0X20	Y	
				31.0	1	R	–	UINT8	0X20	Y	
0	255	32-47	16	32.0	1	R	–	UINT8	–	Y	Serial number
				33.0	1	R	–	UINT8	–	Y	
				34.0	1	R	–	UINT8	–	Y	
				35.0	1	R	–	UINT8	–	Y	
				36.0	1	R	–	UINT8	–	Y	
				37.0	1	R	–	UINT8	–	Y	
				38.0	1	R	–	UINT8	–	Y	
				39.0	1	R	–	UINT8	–	Y	
				40.0	1	R	–	UINT8	–	Y	
				41.0	1	R	–	UINT8	–	Y	
				42.0	1	R	–	UINT8	–	Y	
				43.0	1	R	–	UINT8	–	Y	
				44.0	1	R	–	UINT8	–	Y	
				45.0	1	R	–	UINT8	–	Y	
				46.0	1	R	–	UINT8	–	Y	
				47.0	1	R	–	UINT8	–	Y	
0	255	48-49	2	48.0	1	R	–	UINT8	–	Y	Hardware version
				49.0	1	R	–	UINT8	–	Y	
0	255	50-53	4	50.0	1	R	–	UINT8	–	Y	Software version
				51.0	1	R	–	UINT8	–	Y	
				52.0	1	R	–	UINT8	–	Y	
				53.0	1	R	–	UINT8	–	Y	
0	255	54-55	2	54.0	1	R	–	UINT8	0	Y	Revision counter
				55.0	1	R	–	UINT8	0	Y	
0	255	56-57	2	56.0	1	R	–	UINT8	0X5E	Y	Profile ID
				57.0	1	R	–	UINT8	0	Y	
0	255	58-59	2	58.0	1	R	–	UINT8	0	Y	Profile specification
				59.0	1	R	–	UINT8	0	Y	
0	255	60-61	2	60.0	1	R	–	UINT8	0X01	Y	IM version
				61.0	1	R	–	UINT8	0X01	Y	
0	255	62-63	2	62.0	1	R	–	UINT8	0	Y	IM supported
			2	63.0	1	R	–	UINT8	0X0E	Y	

I&M1 Header Data

The table lists the I&M1 header data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size (in bytes)	Byte. Bit	X	RW	Unit	Type	De-fault value	Svd	Parameter name
0	255	0-9	10	0.0	1	RW	–	UINT8	0	Y	I&M1 header
				1.0	1	RW	–	UINT8	0	Y	
				2.0	1	RW	–	UINT8	0	Y	
				3.0	1	RW	–	UINT8	0	Y	
				4.0	1	RW	–	UINT8	0	Y	
				5.0	1	RW	–	UINT8	0	Y	
				6.0	1	RW	–	UINT8	0	Y	
				7.0	1	RW	–	UINT8	0	Y	
				8.0	1	RW	–	UINT8	0	Y	
				9.0	1	RW	–	UINT8	0	Y	
0	255	10-41	32	10.0	1	RW	–	UINT8	0	Y	Tag function
				11.0	1	RW	–	UINT8	0	Y	
				12.0	1	RW	–	UINT8	0	Y	
				13.0	1	RW	–	UINT8	0	Y	
				14.0	1	RW	–	UINT8	0	Y	
				15.0	1	RW	–	UINT8	0	Y	
				16.0	1	RW	–	UINT8	0	Y	
				17.0	1	RW	–	UINT8	0	Y	
				18.0	1	RW	–	UINT8	0	Y	
				19.0	1	RW	–	UINT8	0	Y	
				20.0	1	RW	–	UINT8	0	Y	
				21.0	1	RW	–	UINT8	0	Y	
				22.0	1	RW	–	UINT8	0	Y	
				23.0	1	RW	–	UINT8	0	Y	
				24.0	1	RW	–	UINT8	0	Y	
				25.0	1	RW	–	UINT8	0	Y	
				26.0	1	RW	–	UINT8	0	Y	
				27.0	1	RW	–	UINT8	0	Y	
				28.0	1	RW	–	UINT8	0	Y	
				29.0	1	RW	–	UINT8	0	Y	
				30.0	1	RW	–	UINT8	0	Y	
				31.0	1	RW	–	UINT8	0	Y	
				32.0	1	RW	–	UINT8	0	Y	
				33.0	1	RW	–	UINT8	0	Y	
				34.0	1	RW	–	UINT8	0	Y	
				35.0	1	RW	–	UINT8	0	Y	
				36.0	1	RW	–	UINT8	0	Y	
				37.0	1	RW	–	UINT8	0	Y	
				38.0	1	RW	–	UINT8	0	Y	
				39.0	1	RW	–	UINT8	0	Y	
				40.0	1	RW	–	UINT8	0	Y	

Slot	Index	Byte offset	Size (in bytes)	Byte. Bit	X	RW	Unit	Type	De-fault value	Svd	Parameter name
				41.0	1	RW	–	UINT8	0	Y	
0	255	42-63	22	42.0	1	RW	–	UINT8	0	Y	Tag location
				43.0	1	RW	–	UINT8	0	Y	
				44.0	1	RW	–	UINT8	0	Y	
				45.0	1	RW	–	UINT8	0	Y	
				46.0	1	RW	–	UINT8	0	Y	
				47.0	1	RW	–	UINT8	0	Y	
				48.0	1	RW	–	UINT8	0	Y	
				49.0	1	RW	–	UINT8	0	Y	
				50.0	1	RW	–	UINT8	0	Y	
				51.0	1	RW	–	UINT8	0	Y	
				52.0	1	RW	–	UINT8	0	Y	
				53.0	1	RW	–	UINT8	0	Y	
				54.0	1	RW	–	UINT8	0	Y	
				55.0	1	RW	–	UINT8	0	Y	
				56.0	1	RW	–	UINT8	0	Y	
				57.0	1	RW	–	UINT8	0	Y	
				58.0	1	RW	–	UINT8	0	Y	
				59.0	1	RW	–	UINT8	0	Y	
				60.0	1	RW	–	UINT8	0	Y	
				61.0	1	RW	–	UINT8	0	Y	
				62.0	1	RW	–	UINT8	0	Y	
				63.0	1	RW	–	UINT8	0	Y	

I&M2 Header Data

The table lists the I&M2 header data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size in bytes	Byte. Bit	X	RW	Unit	Type	De-fault value	Svd	Parameter name
0	255	0-9	10	0.0	1	RW	–	UINT8	0	Y	I&M2 header
				1.0	1	RW	–	UINT8	0	Y	
				2.0	1	RW	–	UINT8	0	Y	
				3.0	1	RW	–	UINT8	0	Y	
				4.0	1	RW	–	UINT8	0	Y	
				5.0	1	RW	–	UINT8	0	Y	
				6.0	1	RW	–	UINT8	0	Y	
				7.0	1	RW	–	UINT8	0	Y	
				8.0	1	RW	–	UINT8	0	Y	
				9.0	1	RW	–	UINT8	0	Y	
0	255	10-25	16	10.0	1	RW	–	UINT8	0	Y	Installation date
				11.0	1	RW	–	UINT8	0	Y	
				12.0	1	RW	–	UINT8	0	Y	
				13.0	1	RW	–	UINT8	0	Y	
				14.0	1	RW	–	UINT8	0	Y	
				15.0	1	RW	–	UINT8	0	Y	
				16.0	1	RW	–	UINT8	0	Y	
				17.0	1	RW	–	UINT8	0	Y	
				18.0	1	RW	–	UINT8	0	Y	
				19.0	1	RW	–	UINT8	0	Y	
				20.0	1	RW	–	UINT8	0	Y	
				21.0	1	RW	–	UINT8	0	Y	
				22.0	1	RW	–	UINT8	0	Y	
				23.0	1	RW	–	UINT8	0	Y	
				24.0	1	RW	–	UINT8	0	Y	
				25.0	1	RW	–	UINT8	0	Y	
0	255	26-63	38	26.0–63.0	–	–	–	–	–	–	Reserved

I&M3 Header Data

The table lists the I&M3 header data for the PROFIBUS DP communication.

Slot	Index	Byte offset	Size in bytes	Byte. Bit	X	RW	Unit	Type	De-fault value	Svd	Parameter name
0	255	0-9	10	0.0	1	RW	–	UINT8	0	Y	I&M3 header
				1.0	1	RW	–	UINT8	0	Y	
				2.0	1	RW	–	UINT8	0	Y	
				3.0	1	RW	–	UINT8	0	Y	
				4.0	1	RW	–	UINT8	0	Y	
				5.0	1	RW	–	UINT8	0	Y	
				6.0	1	RW	–	UINT8	0	Y	
				7.0	1	RW	–	UINT8	0	Y	
				8.0	1	RW	–	UINT8	0	Y	
				9.0	1	RW	–	UINT8	0	Y	
0	255	10-63	54	10.0	1	RW	–	UINT8	0	Y	Descriptor
				11.0	1	RW	–	UINT8	0	Y	
				12.0	1	RW	–	UINT8	0	Y	
				13.0	1	RW	–	UINT8	0	Y	
				14.0	1	RW	–	UINT8	0	Y	
				15.0	1	RW	–	UINT8	0	Y	
				16.0	1	RW	–	UINT8	0	Y	
				17.0	1	RW	–	UINT8	0	Y	
				18.0	1	RW	–	UINT8	0	Y	
				19.0	1	RW	–	UINT8	0	Y	
				20.0	1	RW	–	UINT8	0	Y	
				21.0	1	RW	–	UINT8	0	Y	
				22.0	1	RW	–	UINT8	0	Y	
				23.0	1	RW	–	UINT8	0	Y	
				24.0	1	RW	–	UINT8	0	Y	
				25.0	1	RW	–	UINT8	0	Y	
				26.0–63.0	1	RW	–	UINT8	0	Y	

Appendices

What's in This Part

Trip Code

Trip code	Trip description
1	Thermal overload trip
2	Locked rotor trip
3	Stalled rotor trip
4	Definite time overcurrent trip
5	Normal inverse overcurrent trip
6	Short time overcurrent trip
7	Calculated ground trip
8	Measured ground trip
9	Phase under current trip
10	Current imbalance trip
11	Current phase loss trip
12	Current phase reversal trip
13	Phase under voltage trip
14	Phase over voltage trip
15	Voltage phase loss trip
16	Voltage imbalance trip
17	Voltage phase reversal trip
18	Under frequency trip
19	Over frequency trip
20	Excessive start time trip
21	Communication loss trip
22	Over Temperature trip
23	Under power trip
24	Over power trip
25	Under power factor trip
26	Reserved
27	Device internal trip
28	HMI communication loss trip
29	Wiring error detection trip
30-32	Reserved
33	Interlock 1 trip
34	Interlock 2 trip
35	Interlock 3 trip
36	Interlock 4 trip
37	Interlock 5 trip
38	Interlock 6 trip
39	Interlock 7 trip
40	Interlock 8 trip
41	Interlock 9 trip
42	Interlock 10 trip

Trip code	Trip description
43	Interlock 11 trip
44	Interlock 12 trip
45–48	Reserved
49	LTMT main unit temperature
50-94	Reserved
95	Stucked reset key
96	Logic test interrupted trip
97	Motor stop error detection trip
98	Reserved

Event Code

Alarm Events

Event code	Description
1	Thermal overload alarm
2	Thermal overload alarm reset
3	Locked rotor alarm
4	Locked rotor alarm reset
5	Stalled rotor alarm
6	Stalled rotor alarm reset
7	Definite time overcurrent alarm
8	Definite time overcurrent alarm reset
9	Normal inverse overcurrent alarm
10	Normal inverse overcurrent alarm reset
11	Short time overcurrent alarm
12	Short time overcurrent alarm reset
13	Calculated ground fault alarm
14	Calculated ground fault alarm reset
15	Measured ground fault alarm
16	Measured ground fault alarm reset
17	Phase under current alarm
18	Phase under current alarm reset
19	Current imbalance alarm
20	Current imbalance alarm reset
21	Current phase loss alarm
22	Current phase loss alarm reset
23	Current phase reversal alarm
24	Current phase reversal alarm reset
25	Phase under voltage alarm
26	Phase under voltage alarm reset
27	Phase over voltage alarm
28	Phase over voltage alarm reset
29	Voltage phase loss alarm
30	Voltage phase loss alarm reset
31	Voltage imbalance alarm
32	Voltage imbalance alarm reset
33	Voltage phase reversal alarm
34	Voltage phase reversal alarm reset
35	Under frequency alarm
36	Under frequency alarm reset
37	Over frequency alarm
38	Over frequency alarm reset
39-40	Reserved

Event code	Description
41	Communication loss alarm
42	Communication loss alarm reset
43	Over temperature alarm
44	Over temperature alarm reset
45	Under power alarm
46	Under power alarm reset
47	Over power alarm
48	Over power alarm reset
49	Under power factor alarm
50	Under power factor alarm reset
51-52	Reserved
53	Device internal temperature alarm
54	Device internal temperature alarm reset
55	HMI communication loss alarm
56	HMI communication loss alarm reset
57-64	Reserved
65	Interlock 1 alarm
66	Interlock 1 alarm reset
67	Interlock 2 alarm
68	Interlock 2 alarm reset
69	Interlock 3 alarm
70	Interlock 3 alarm reset
71	Interlock 4 alarm
72	Interlock 4 alarm reset
73	Interlock 5 alarm
74	Interlock 5 alarm reset
75	Interlock 6 alarm
76	Interlock 6 alarm reset
77	Interlock 7 alarm
78	Interlock 7 alarm reset
79	Interlock 8 alarm
80	Interlock 8 alarm reset
81	Interlock 9 alarm
82	Interlock 9 alarm reset
83	Interlock 10 alarm
84	Interlock 10 alarm reset
85	Interlock 11 alarm
86	Interlock 11 alarm reset
87	Interlock 12 alarm
88	Interlock 12 alarm reset
89–96	Reserved
97	LTMT main unit temperature alarm
98	LTMT main unit temperature alarm reset
99-128	Reserved
129-192	Reserved

Pickup Events

Event code	Description
193	Thermal overload pickup
194	Thermal overload pickup reset
195	Locked rotor pickup
196	Locked rotor pickup reset
197	Stalled rotor pickup
198	Stalled rotor pickup reset
199	Definite time overcurrent pickup
200	Definite time overcurrent pickup reset
201	Normal inverse overcurrent pickup
202	Normal inverse overcurrent pickup reset
203	Short time overcurrent pickup
204	Short time overcurrent pickup reset
205	Calculated ground fault pickup
206	Calculated ground fault pickup reset
207	Measured ground fault pickup
208	Measured ground fault pickup reset
209	Phase under current pickup
210	Phase under current pickup reset
211	Current imbalace pickup
212	Current imbalace pickup reset
213	Current phase loss pickup
214	Current phase loss pickup reset
215	Current phase reversal pickup
216	Current phase reversal pickup reset
217	Phase under voltage pickup
218	Phase under voltage pickup reset
219	Phase over voltage pickup
220	Phase over voltage pickup reset
221	Voltage phase loss pickup
222	Voltage phase loss pickup reset
223	Voltage imbalace pickup
224	Voltage imbalace pickup reset
225	Voltage phase reversal pickup
226	Voltage phase reversal pickup reset
227	Under frequency pickup
228	Under frequency pickup reset
229	Over frequency pickup
230	Over frequency pickup reset
231	Excessive start time pickup
232	Excessive start time pickup reset

Event code	Description
233	Communication loss pickup
234	Communication loss pickup reset
235	Over temperature pickup
236	Over temperature pickup reset
237	Under power pickup
238	Under power pickup reset
239	Over power pickup
240	Over power pickup reset
241	Under power factor pickup
242	Under power factor pickup reset
243-244	Reserved
245	Device internal pickup
246	Device internal pickup reset
247	HMI communication loss pickup
248	HMI communication loss pickup reset
249-256	Reserved
257	Interlock 1 pickup
258	Interlock 1 pickup reset
259	Interlock 2 pickup
260	Interlock 2 pickup reset
261	Interlock 3 pickup
262	Interlock 3 pickup reset
263	Interlock 4 pickup
264	Interlock 4 pickup reset
265	Interlock 5 pickup
266	Interlock 5 pickup reset
267	Interlock 6 pickup
268	Interlock 6 pickup reset
269	Interlock 7 pickup
270	Interlock 7 pickup reset
271	Interlock 8 pickup
272	Interlock 8 pickup reset
273	Interlock 9 pickup
274	Interlock 9 pickup reset
275	Interlock 10 pickup
276	Interlock 10 pickup reset
277	Interlock 11 pickup
278	Interlock 11 pickup reset
279	Interlock 12 pickup
280	Interlock 12 pickup reset
281-288	Reserved
289	LTMT main unit temperature pickup

Event code	Description
290	LTMT main unit temperature pickup reset
291-384	Reserved

Digital Input Events

Event code	Description
385	DI 1 ON
386	DI 1 OFF
387	DI 2 ON
388	DI 2 OFF
389	DI 3 ON
390	DI 3 OFF
391	DI 4 ON
392	DI 4 OFF
393	DI 5 ON
394	DI 5 OFF
395	DI 6 ON
396	DI 6 OFF
397	DI 7 ON
398	DI 7 OFF
399	DI 8 ON
400	DI 8 OFF
401	DI 9 ON
402	DI 9 OFF
403	DI 10 ON
404	DI 10 OFF
405	DI 11 ON
406	DI 11 OFF
407	DI 12 ON
408	DI 12 OFF
409	DI 13 ON
410	DI 13 OFF
411	DI 14 ON
412	DI 14 OFF
413	DI 15 ON
414	DI 15 OFF
415	DI 16 ON
416	DI 16 OFF
417	DI 17 ON
418	DI 17 OFF
419	DI 18 ON
420	DI 18 OFF
421	DI 19 ON
422	DI 19 OFF
423	DI 20 ON

Event code	Description
424	DI 20 OFF
425	DI 21 ON
426	DI 21 OFF
427	DI 22 ON
428	DI 22 OFF
429	DI 23 ON
430	DI 23 OFF
431	DI 24 ON
432	DI 24 OFF
433–448	Reserved

Digital Output Events

Event code	Description
449	DO 1 ON
450	DO 1 OFF
451	DO 2 ON
452	DO 2 OFF
453	DO 3 ON
454	DO 3 OFF
455	DO 4 ON
456	DO 4 OFF
457	DO 5 ON
458	DO 5 OFF
459	DO 6 ON
460	DO 6 OFF
461	DO 7 ON
462	DO 7 OFF
463	DO 8 ON
464	DO 8 OFF
465	DO 9 ON
466	DO 9 OFF
467	DO 10 ON
468	DO 10 OFF
469	DO 11 ON
470	DO 11 OFF
471	DO 12 ON
472	DO 12 OFF
473	DO 13 ON
474	DO 13 OFF
475-512	Reserved

Digital Input Events

Event code	Description
513	Trip reset DI ON
514	Trip reset DI OFF
515	Breaker close DI ON
516	Breaker close DI OFF
517	Breaker open DI ON
518	Breaker open DI OFF
519	Local-START> DI ON
520	Local-START> DI OFF
521	Local-START>> DI ON
522	Local-START>> DI OFF
523	Local-STOP DI ON
524	Local-STOP DI OFF
525	Local-START< DI ON
526	Local-START< DI OFF
527	Local-START<< DI ON
528	Local-START<< DI OFF
529	Remote-START> DI ON
530	Remote-START> DI OFF
531	Remote-START>> DI ON
532	Remote-START>> DI OFF
533	Remote-STOP DI ON
534	Remote-STOP DI OFF
535	Remote-START< DI ON
536	Remote-START< DI OFF
537	Remote-START<< DI ON
538	Remote-START<< DI OFF
539	Interlock 1 DI ON
540	Interlock 1 DI OFF
541	Interlock 2 DI ON
542	Interlock 2 DI OFF
543	Interlock 3 DI ON
544	Interlock 3 DI OFF
545	Interlock 4 DI ON
546	Interlock 4 DI OFF
547	Interlock 5 DI ON
548	Interlock 5 DI OFF
549	Interlock 6 DI ON
550	Interlock 6 DI OFF
551	Interlock 7 DI ON
552	Interlock 7 DI OFF
553	Interlock 8 DI ON
554	Interlock 8 DI OFF
555	Interlock 9 DI ON
556	Interlock 9 DI OFF

Event code	Description
557	Interlock 10 DI ON
558	Interlock 10 DI OFF
559	Interlock 11 DI ON
560	Interlock 11 DI OFF
561	Interlock 12 DI ON
562	Interlock 12 DI OFF
563	Contactor open DI ON
564	Contactor open DI OFF
565	RUN DI ON
566	RUN DI OFF
567	Block input DI ON
568	Block input DI OFF
569	Logic test DI ON
570	Logic test DI OFF
571	Mode selection 1 DI ON
572	Mode selection 1 DI OFF
573	Mode selection 2 DI ON
574	Mode selection 2 DI OFF
575	Speed change DI ON
576	Speed change DI OFF
577	Forced start DI ON
578	Forced start DI OFF
579	Forced stop DI ON
580	Forced stop DI OFF
581	Self test without trip DI ON
582	Self test without trip DI OFF
583	Self test with trip DI ON
584	Self test with trip DI OFF
585	Soft starter reset DI ON
586	Soft starter reset DI OFF
587-640	Reserved

Inhibit Events

Event code	Description
641	No voltage inhibit
642	No voltage inhibit reset
643	Under voltage inhibit
644	Under voltage inhibit reset
645	Trip inhibit
646	Trip inhibit reset
647	Thermal inhibit
648	Thermal inhibit reset

Event code	Description
649	Max starts inhibit
650	Max starts inhibit reset
651	Interlock 1 inhibit
652	Interlock 1 inhibit reset
653	Interlock 2 inhibit
654	Interlock 2 inhibit reset
655	Interlock 3 inhibit
656	Interlock 3 inhibit reset
657	Interlock 4 inhibit
658	Interlock 4 inhibit reset
659	Interlock 5 inhibit
660	Interlock 5 inhibit reset
661	Interlock 6 inhibit
662	Interlock 6 inhibit reset
663	Interlock 7 inhibit
664	Interlock 7 inhibit reset
665	Interlock 8 inhibit
666	Interlock 8 inhibit reset
667	Interlock 9 inhibit
668	Interlock 9 inhibit reset
669	Interlock 10 inhibit
670	Interlock 10 inhibit reset
671	Interlock 11 inhibit
672	Interlock 11 inhibit reset
673	Interlock 12 inhibit
674	Interlock 12 inhibit reset
675	Local DI stop inhibit
676	Local DI stop inhibit reset
677	Remote DI stop inhibit
678	Remote DI stop inhibit reset
679	Comm stop inhibit
680	Comm stop inhibit reset
681	Forced stop inhibit
682	Forced stop inhibit reset
683	Anti backspin inhibit
684	Anti backspin inhibit reset
685	Device internal error inhibit
686	Device internal error inhibit reset
687	Interlock time inhibit
688	Interlock time inhibit reset
689	Speed change inhibit
690	Speed change inhibit reset
691	Custom stop inhibit
692	Custom stop inhibit reset
693	Firmware update inhibit

Event code	Description
694	Firmware update inhibit reset
695-768	Reserved

HMI Command Events

Event code	Description
769	HMI or DTM Start >
770	HMI or DTM start >>
771	HMI or DTM stop
772	HMI or DTM start <
773	HMI or DTM start <<
774	HMI or DTM trip reset
775	HMI or DTM inhibit reset (max starts)
776	HMI or DTM reset starts counter
777	HMI or DTM reset stops counter
778	HMI or DTM clear thermal memory
779	HMI or DTM reset total run hour
780	HMI or DTM reset energy
781	HMI or DTM forced start
782	HMI or DTM logic test input
783	HMI or DTM self test without trip
784	HMI or DTM self test with trip
785	HMI or DTM reset soft starter
786	HMI or DTM reset trip counter
787-792	Reserved
793	HMI or DTM reset network port setting
794	HMI or DTM reset all
795	HMI or DTM clear statistics
796	HMI or DTM reset protection setting
797	HMI or DTM save reference curve
798	HMI or DTM clear trip logs
799	HMI or DTM clear event logs
800	HMI or DTM factory reset

Communication Command Events

Event code	Description
801	COMM Start >
802	COMM Start >>
803	COMM Stop
804	COMM Start <
805	COMM Start <<

Event code	Description
806	COMM Trip reset
807	COMMInhibit reset (max starts)
808	COMM Reset starts counter
809	COMM Reset stops counter
810	COMM Clear thermal memory
811	COMM Reset total run hour
812	COMM Reset energy
813	COMM Forced start
814	COMM Logic test input
815	COMM Self test without trip
816	COMMSelf test with trip
817	COMMReset soft starter
818	COMM Reset trip counter
819-824	Reserved
825	COMM Reset network port setting
826	COMM Reset all
827	COMM Clear statistics
828	COMM Reset protection settings
829	COMM Save reference curve
830	COMM Clear trip logs
831	COMM Clear event logs
832	COMM Factory reset
833	Permissive command 1
834	Permissive command 2
835	Permissive command 3
836	Permissive command 4
837	Permissive command 5
838	Permissive command 6
839	Permissive command 7
840	Permissive command 8
841-896	Reserved

Trip Reset Events

Event code	Description
897	Thermal overload trip reset
898	Locked rotor trip reset
899	Stalled rotor trip reset
900	Definite time overcurrent trip reset
901	Normal inverse overcurrent trip reset
902	Short time overcurrent trip reset
903	Calculated ground fault trip reset
904	Measured ground fault trip reset

Event code	Description
905	Phase under current trip reset
906	Current imbalance trip reset
907	Current phase loss trip reset
908	Current phase reversal trip reset
909	Phase under voltage trip reset
910	Phase over voltage trip reset
911	Voltage phase loss trip reset
912	Voltage imbalance trip reset
913	Voltage phase reversal trip reset
914	Under frequency trip reset
915	Over frequency trip reset
916	Excessive start time trip reset
917	Communication loss trip reset
918	Over temperature trip reset
919	Under power trip reset
920	Over power trip reset
921	Under power factor trip reset
922	Reserved
923	Device internal trip reset
924	HMI communication loss trip reset
925-928	Reserved
929	Interlock 1 trip reset
930	Interlock 2 trip reset
931	Interlock 3 trip reset
932	Interlock 4 trip reset
933	Interlock 5 trip reset
934	Interlock 6 trip reset
935	Interlock 7 trip reset
936	Interlock 8 trip reset
937	Interlock 9 trip reset
938	Interlock 10 trip reset
939	Interlock 11 trip reset
940	Interlock 12 trip reset
941-944	Reserved
945	LTMT main unit temperature trip reset
946-991	Reserved
992	Logic test interrupted trip reset
993	Motor stop error detection trip reset
994-1024	Reserved

Digital Output

Event code	Description
1025	Device internal DO ON
1026	Device internal DO OFF
1027	Trip DO ON
1028	Trip DO OFF
1029	Alarm DO ON
1030	Alarm DO OFF
1031	Pickup DO ON
1032	Pickup DO OFF
1033	inhibit DO ON
1034	inhibit DO OFF
1035	Block OP DO ON
1036	Block OP DO OFF
1037	CNTR OP1 DO ON
1038	CNTR OP1 DO OFF
1039	CNTR OP2 DO ON
1040	CNTR OP2 DO OFF
1041	CNTR OP3 DO ON
1042	CNTR OP3 DO OFF
1043	CNTR OP4 DO ON
1044	CNTR OP4 DO OFF
1045	CNTR OP5 DO ON
1046	CNTR OP5 DO OFF
1047	CNTR OP6 DO ON
1048	CNTR OP6 DO OFF
1049-1152	Reserved

System and Control Events

Event code	Description
1153	Power down
1154	Power up
1155	Mode changed to Local1
1156	Mode changed to Local2
1157	Mode changed to Local3
1158	Mode changed to Remote
1159	Device internal error detected
1160	Self test WO trip start
1161	Self test with trip start
1162	Logic test start
1163	Reset button OFF
1164	Reset button ON

Event code	Description
1165	Reserved
1166	Date/Time updated
1167	Invalid start command
1168	Start error detected - No feedback
1169	Start error detected - Inhibit present
1170	Start error detected - Current or RUN DI feedback present
1171	Start error detected - No access
1172	Stop error detected - No access
1173	Logic test interrupted
1174	Communication loss detected
1175	Communication restored
1176	Mode shifted from Remote to Local1
1177	Auto restart
1178	Auto stopped
1179	Factory reset – test/reset key
1180	Bypass stop DI function disabled
1181	Bypass stop DI function enabled
1182	HMI Login Success
1183	HMI Login Error - Incorrect Pin
1184	HMI Logout Success
1185	HMI Logout - Session Timeout
1186	HMI Logout- Connection Lost
1187	DTM Login Success
1188	DTM Login Error - Incorrect Pin
1189	DTM Logout Success
1190	DTM Logout - Session Timeout
1191	DTM Logout- Connection Lost
1192	DTM New Pin Set
1193	DTM New Pin set Error - Invalid pin format
1194	DTM Pin Change Success
1195	DTM Pin Change Error
1196	DTM Pin Change Error - Invalid pin format
1197	DTM Pin Reset Success
1198	DTM Pin Reset Error - Incorrect Pin
1199	COMM Login Success
1200	COMM Login Error – Incorrect Pin
1201	COMM Logout Success
1202	COMM Logout – Session Timeout
1203	COMM Logout – Connection Lost
1204	COMM New Pin Set
1205	COMM New Pin Set Error – Invalid pin format
1206	COMM Pin Change Success
1207	COMM Change Error – Incorrect Pin

Event code	Description
1208	COMM Change Error – Invalid Format
1209	COMM Password Reset Success
1210	COMM Reset Error – Incorrect Pin
1211	Error - Pin not saved
1212	Error - Wrong LoginID
1213–1216	Reserved
1217	Custom Start >
1218	Custom Start >>
1219	Custom Stop
1220	Custom Start <
1221	Custom Start <<
1222	Start > Command Executed
1223	Start >> Command Executed
1224	Start < Command Executed
1225	Start << Command Executed
1226	Stop Command Executed
1227–1280	Reserved
1281	DPV1 Start >
1282	DPV1 Start >>
1283	DPV1 Stop
1284	DPV1 Start <
1285	DPV1 Start <<
1286	DPV1 Trip reset
1287	DPV1 Inhibit reset (Max Starts)
1288	DPV1 Reset starts counter
1289	DPV1 Reset stops counter
1290	DPV1 Clear thermal memory
1291	DPV1 Reset total run hour
1292	DPV1 Reset energy
1293	DPV1 Forced start
1294	DPV1 Logic test
1295	DPV1 Self test without trip
1296	DPV1 Self test with trip
1297	DPV1 Reset soft starter
1298	DPV1 Reset trip counter
1299–1312	Reserved
1313	DPV1 Permissive Command 1
1314	DPV1 Permissive Command 2
1315	DPV1 Permissive Command 3
1316	DPV1 Permissive Command 4
1317	DPV1 Permissive Command 5
1318	DPV1 Permissive Command 6
1319	DPV1 Permissive Command 7
1320	DPV1 Permissive Command 8
1321-1344	Reserved

Event code	Description
1345	LTMT main unit FW valid
1346	LTMT main unit invalid sign
1347	LTMT main unit incompatible ver
1348	LTMT main unit FW update success
1349–1360	Reserved
1361	LTMTCT/LTMTCTV sensor module FW valid
1362	LTMTCT/LTMTCTV sensor module invalid sign
1363	LTMTCT/LTMTCTV sensor module incompatible ver
1364	LTMTCT/LTMTCTV sensor module FW update success
1365	LTMTCT/LTMTCTV sensor module FW update timeout
1366–1376	Reserved
1377	LTMT expansion unit FW valid
1378	LTMT expansion unit invalid sign
1379	LTMT expansion unit incompatible ver
1380	LTMT expansion unit FW update success
1381	LTMT expansion unit FW update timeout
1382–1408	Reserved

Device Internal Error Code

Detected internal error code	Description
1	Sensor module communication error detected
2	Sensor module communication error reset
3	Expansion module communication error detected
4	Expansion module communication error reset
5	HMI communication error detected
6	HMI communication error reset
7	EEPROM interface error detected
8	EEPROM interface error reset
9	EEPROM checksum error detected
10	EEPROM checksum error reset
11	Configuration error detected
12	Configuration error reset
13	PROFIBUS DP interface error detected
14	PROFIBUS DP interface error reset
15	Internal temperature major error detected
16	Internal temperature major error reset
17	Main unit watchdog timeout detected
18	Main unit watchdog timeout error reset
19	Low Battery detected
20	Low Battery error reset
21–22	Reserved
23	LTMT main unit temperature input error detected
24	LTMT main unit temperature input error reset
25	Energy register overflow
26	Energy register overflow error reset
27	Error detected during expansion unit initiation
28	Expansion unit initiation error reset
29	RTC initialization error detected
30	RTC initialization error reset
31	Internal temperature minor error detected
32	Internal temperature minor error reset
33–64	Reserved
65	LTMTCT/LTMTCTV sensor module watchdog timeout detected
66	LTMTCT/LTMTCTV sensor module watchdog timeout error reset
67	ADC conversion error detected
68	ADC conversion error reset
69	Flash error detected
70	Flash error reset
71	UART error detected
72	UART error reset
73	Voltage configuration not detected

Detected internal error code	Description
74	Voltage configuration error reset
75–76	Reserved
77	Calibration error detected
78	Calibration error reset
79	VL1 measurement error detected
80	VL1 measurement error reset
81	VL2 measurement error detected
82	VL2 measurement error reset
83	VL3 measurement error detected
84	VL3 measurement error reset
85	IL1 low gain measurement error detected
86	IL1 low gain measurement error reset
87	IL1 high gain measurement error detected
88	IL1 high gain measurement error reset
89	IL2 low gain measurement error detected
90	IL2 low gain measurement error reset
91	IL2 high gain measurement error detected
92	IL2 high gain measurement error reset
93	IL3 low gain measurement error detected
94	IL3 low gain measurement error reset
95	IL3 high gain measurement error detected
96	IL3 high gain measurement error reset
97–128	Reserved

Data Addresses

Metering Data

Data Address	Description
5500	L1 RMS current
5502	L2 RMS current
5504	L3 RMS current
5506	Measured ground current
5508	Calculated ground current
5510	Average current
5512	Current imbalance
5513	Current phase sequence
5514	For single phase, L1–N RMS voltage For three phase, L1–L2 RMS voltage
5516	L2–L3 RMS voltage
5518	L3–L1 RMS voltage
5520	Average voltage
5522	Voltage imbalance
5523	Voltage phase sequence
5524	System frequency
5525	System power factor
5526	Total active power
5528	Total reactive power
5530	Total apparent power
5532	Total active energy
5536	Total reactive energy
5540	Total apparent energy
5544	L1 Current THD
5545	L2 Current THD
5546	L3 Current THD
5547	For single phase, L1–N RMS voltage For three phase, L1–L2 RMS voltage
5548	L2–L3 Voltage THD
5549	L3–L1 Voltage THD
5550	Temperature measured by PT100 sensor
5551	Temperature measured by binary PTC sensor
5552–5555	Reserved

Motor Data

Data Address	Description
5557	MotorStatus
5558	Thermal Memory
5559	Thermal Time to trip
5561	Thermal Time to cool
5563	Max starts counter
5564	Max start inhibit time
5566	Motor Starting peak current
5568	Motor Starting time
5570	Total run hour
5572	Last run hour
5574	Number of Starts
5575	Number of Stops
5576	Motor Stop Cause
5577	Trip Counter

Last Motor Start Time Stamp

Data Address	Description
5578	Day
5579	Month
5580	Year
5581	Hour
5582	Minute
5583	Second
5584	Reserved

Status Data

Data Address	Description
5625	DI Status
5627	DO Status
5629–5637	Reserved
5638	Reserved
5639	Motor Status(Alarm,pickup,trip)
5640	Motor status(stop, start, run, inhibit)
5641	Alarm Bits
5643	Pickup Bits
5645	Trip Bits
5647	Interlock Alarm Bits
5648	Interlock Pickup Bits

Data Address	Description
5649	Interlock Trip Bits
5650–5655	Reserved
5656	Starter Commands
5658	Motor Run Indicators
5659	Permissive command status
5661	Inhibit Status
5663	ICM - Main Unit
5665	ICM - CTVT
5667	Communication Status
5669	Reserved

Statistic Data

Data Address	Description
5750	Timer 1 - Actual value
5751	Timer 2 - Actual value
5752	Timer 3 - Actual value
5753	Timer 4 - Actual value
5754	Counter 1 - Actual value
5755	Counter 2 - Actual value
5756	Counter 3 - Actual value
5757	Counter 4 - Actual value
5758	Thermal Overload trip Counter
5759	Locked rotor trip counter
5760	Stalled rotor trip counter
5761	Definite time overcurrent trip counter
5762	Normal inverse overcurrent trip counter
5763	Short time overcurrent trip counter
5764	Calculated ground trip Counter
5765	Measured ground trip Counter
5766	Under current trip counter
5767	Current imbalance trip counter
5768	Current phase loss trip counter
5769	Current phase reversal trip counter
5770	Under voltage trip counter
5771	Over voltage trip counter
5772	Voltage phase loss trip counter
5773	Voltage imbalance trip counter
5774	Voltage phase reversal trip counter
5775	Under Frequency trip counter
5776	Over frequency trip counter
5777	Excessive start time trip Counter
5778	Communication loss trip Counter

Data Address	Description
5779	LTMT main unit temperature trip Counter
5780	Under Power trip Counter
5781	Over Power trip Counter
5782	Under Power factor trip Counter
5783–5789	Reserved
5790	DI Interlock 1 trip Counter
5791	DI Interlock 2 trip Counter
5792	DI Interlock 3 trip Counter
5793	DI Interlock 4 trip Counter
5794	DI Interlock 5 trip Counter
5795	DI Interlock 6 trip Counter
5796	DI Interlock 7 trip Counter
5797	DI Interlock 8 trip Counter
5798	DI Interlock 9 trip Counter
5799	DI Interlock 10 trip Counter
5800	DI Interlock 11 trip Counter
5801	DI Interlock 12 trip Counter
5802–5825	Reserved
5826	Calculator 1 output
5827	Calculator 2 output
5828	Motor stop error detection trip counter
5829	Logic test interrupted trip counter
5830	Stucked reset key trip counter

Extended Monitoring Data

Data Address	Description
5875	Status word 1
5876	Status word 2
5877	L1 Current (%IFLC)
5878	L2 Current (%IFLC)
5879	L3 Current (%IFLC)
5880	Calculated Ground Fault (%IFLC)
5881	Average Current (%IFLC)
5882	Maximum Current (Imax)
5883	For single phase, L1–N RMS voltage For three phase, L1–L2 RMS voltage
5884	L2-L3 voltage
5885	L3-L1 voltage
5886	Average Voltage
5887	Total RUN Hour
5888	Last RUN Hour

Data Address	Description
5889	Motor Starting Time
5890	Motor Starting current(%IFLC)
5891	Active Power
5892	Reactive Power
5893	Apparent power
5894	Active Energy
5896	Reactive Energy
5898	Apparent Energy
5900	Mode status

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