Klemsan



DPR-3N

Multifunction
Digital Protection Relay

User Manual

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SECTION 1
GENERAL INFORMATION

General Information

The DPR 31xx and DPR 32xx series are multifunction digital protection relays designed for three-phase systems.
The device optionally monitors the following parameters:

- High Voltage
- Low Voltage
- High Frequency
- Low Frequency
- Phase Loss
- Asymmetry
- PTC Alarm
- Phase Sequence

Proper Use and Safety Conditions

- Installation and wiring must be carried out by authorized personnel in accordance with the instructions provided in this user manual. The device must not be operated until all connections have been correctly completed.
- Before connecting the device to the mains supply, ensure that the power is switched off.
- Use a dry cloth to clean or remove dust from the device. Do not use alcohol, thinner, or abrasive substances.
- The device must be commissioned only after all electrical connections have been completed.
- Do not open the device. There are no user-serviceable parts inside.
- Keep the device away from humid, wet, vibrating, and dusty environments.
- It is recommended to install a circuit breaker or an automatic fuse (2 A) between the device voltage inputs and the mains supply.



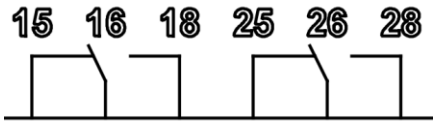
The manufacturer shall not be held responsible for any undesirable situations resulting from failure to comply with the above precautions.

Terminals and General Appearance

A1-A2: Power supply terminals for externally powered devices. Supplied with 85–300 V AC.

L1-L2-L3-N: Phase and neutral inputs to be measured.

15-16-18 / 25-26-28: Relay output terminals of the device. Terminals starting with “1” belong to Relay 1, and those starting with “2” belong to Relay 2.



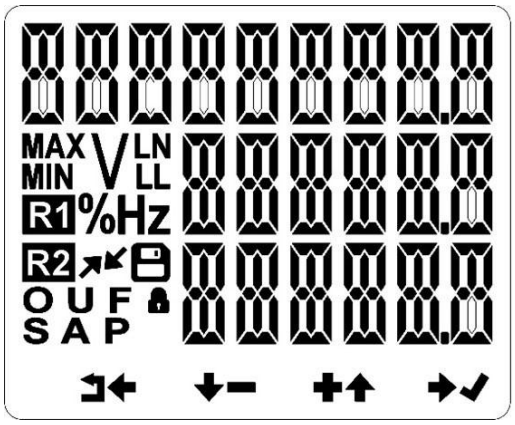
d- / gnd / d+: RS485 communication terminals.

T1-T2: PTC signal input terminals



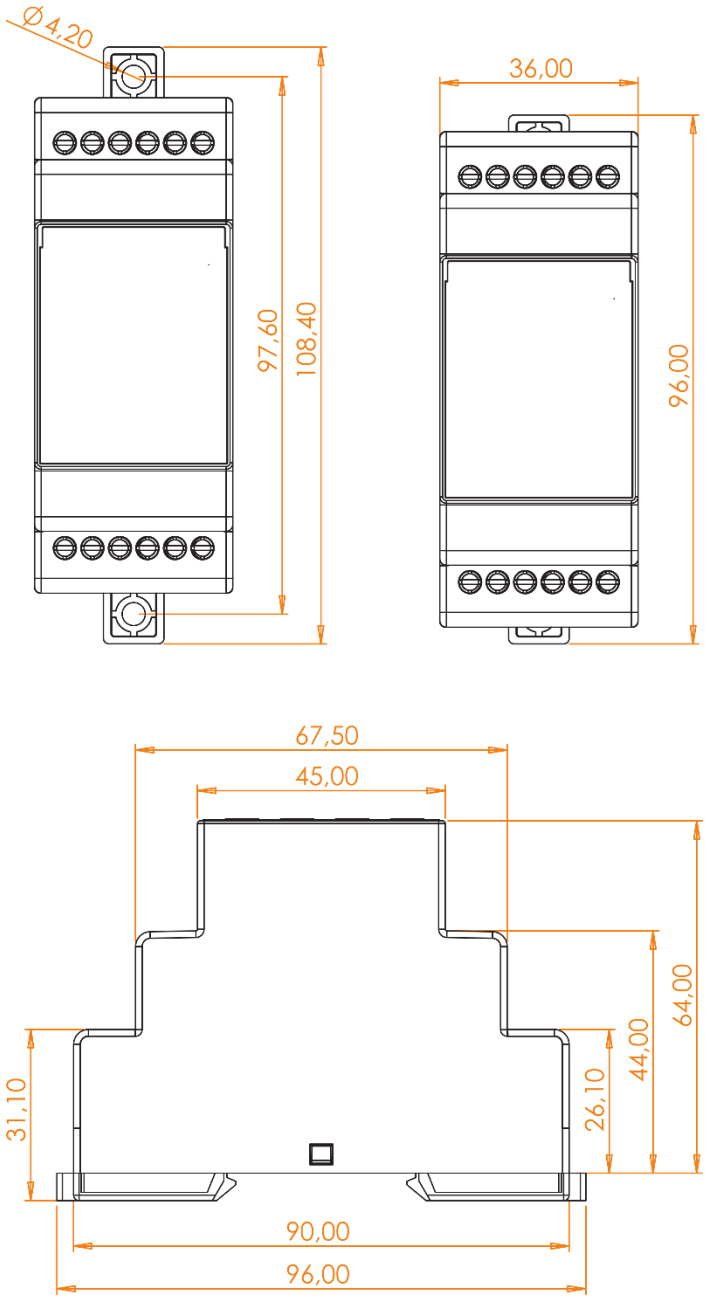
Terminal designations are given in general terms; hardware configurations may vary depending on the model.

Screen Icons



VLN	Phase-to-Neutral Voltage
VLL	Phase-to-Phase Voltage
MAX	Maximum Values
MIN	Minimum Values
R1	Relay No.1 Active
R2	Relay No.2 Active
%	Asymmetry
Hz	Frequency
	Communication
	Memory Menu
O	Upper Limit Fault
U	Lower Limit Fault
F	Phase Loss Fault
S	Phase Sequence Fault
A	Asymmetry Fault
P	PTC Fault
	Password Protection

Product Technical Drawing



Product Specification Tables

Type			DPR 3110N	DPR 3120N	DPR 3230N
Order Number			270610	270612	270615
Enclosure Width (DIN)			2DIN	2DIN	2DIN
Terminal Type			Screw Terminal	Screw Terminal	Screw Terminal
Connection Type			3P4W	3P4W	3P4W
Monitoring Functions	Phase Loss	Range	85 - 520V	85 - 520V	85 - 520V
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Phase Sequence	Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Asymmetry	Range	0 - 30%	0 - 30%	0 - 30%
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Adjustable Voltage (Low–High) Protection	Range	85 - 300V	85 - 300V	85 - 300V
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Adjustable Frequency (Low–High) Protection	Range	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	PTC High Value Protection	Threshold Value	1250 Ω	-	-
		Delay Time	0 - 999 sec	-	-
	PTC Short Circuit Protection	Threshold Value	50 Ω	-	-
		Delay Time	0 - 999 sec	-	-
Operation Type		Operation 1	√	√	√
		Operation 2	-	√	-
Output Type			Relay	Relay	Relay
Auxiliary Contacts		Auxiliary Contacts	1	2	1
		Type	1 C/O (SPDT)	2 C/O (SPDT)	1 C/O (SPDT)
		Max. Current / Voltage (AC)	10A / 250VAC	10A / 250VAC	10A / 250VAC
		Max. Switching Power	1250 VA	1250 VA	1250 VA
Operating Frequency			45-65 Hz	45-65 Hz	45-65 Hz
External Supply			Not Available	Not Available	Not Available
Supply Voltage			85..300 V AC	85..300 V AC	85..300 V AC
Nominal Frequency			45-65Hz	45-65Hz	45-65Hz
RTC			-	-	√
Communication Type		Modbus RTU	-	-	√

Type			DPR 3110EN	DPR 3120EN	DPR 3230EN
Order Number			270620	270622	270625
Enclosure Width (DIN)			2DIN	2DIN	2DIN
Terminal Type			Screw Terminal	Screw Terminal	Screw Terminal
Connection Type			3P4W	3P4W	3P4W
Monitoring Functions	Phase Loss	Range	85 - 520V	85 - 520V	85 - 520V
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Phase Sequence	Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Asymmetry	Range	0 - 30%	0 - 30%	0 - 30%
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Adjustable Voltage (Low–High) Protection	Range	85 - 300V	85 - 300V	85 - 300V
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Adjustable Frequency (Low–High) Protection	Range	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	PTC High Value Protection	Threshold Value	1250 Ω	-	-
		Delay Time	0 - 999 sec	-	-
	PTC Short Circuit Protection	Threshold Value	50 Ω	-	-
		Delay Time	0 - 999 sec	-	-
Operation Type		Operation 1	√	√	√
		Operation 2	-	√	-
Output Type			Relay	Relay	Relay
Auxiliary Contacts		Auxiliary Contacts	1	2	1
		Type	1 C/O (SPDT)	2 C/O (SPDT)	1 C/O (SPDT)
		Max. Current / Voltage (AC)	10A / 250VAC	10A / 250VAC	10A / 250VAC
		Max. Switching Power	1250 VA	1250 VA	1250 VA
Operating Frequency			45-65 Hz	45-65 Hz	45-65 Hz
External Supply			Available	Available	Available
Supply Voltage			85..300 V AC	85..300 V AC	85..300 V AC
Nominal Frequency			45-65Hz	45-65Hz	45-65Hz
RTC			-	-	√
Communication Type		Modbus RTU	-	-	√

Type			DPR 3111N	DPR 3121N	DPR 3231N
Order Number			270630	270632	270635
Enclosure Width (DIN)			2DIN	2DIN	2DIN
Terminal Type			Screw Terminal	Screw Terminal	Screw Terminal
Connection Type			3P3W	3P3W	3P3W
Monitoring Functions	Phase Loss	Range	85 - 520V	85 - 520V	85 - 520V
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Phase Sequence	Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Asymmetry	Range	0 - 30%	0 - 30%	0 - 30%
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Adjustable Voltage (Low–High) Protection	Range	85 - 300V	85 - 300V	85 - 300V
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	Adjustable Frequency (Low–High) Protection	Range	45 - 65 Hz	45 - 65 Hz	45 - 65 Hz
		Delay Time	0 - 999 sec	0 - 999 sec	0 - 999 sec
	PTC High Value Protection	Threshold Value	1250 Ω	-	-
		Delay Time	0 - 999 sec	-	-
	PTC Short Circuit Protection	Threshold Value	50 Ω	-	-
		Delay Time	0 - 999 sec	-	-
Operation Type		Operation 1	√	√	√
		Operation 2	-	√	-
Output Type			Relay	Relay	Relay
Auxiliary Contacts		Auxiliary Contacts	1	2	1
		Type	1 C/O (SPDT)	2 C/O (SPDT)	1 C/O (SPDT)
		Max. Current / Voltage (AC)	10A / 250VAC	10A / 250VAC	10A / 250VAC
		Max. Switching Power	1250 VA	1250 VA	1250 VA
Operating Frequency			45-65 Hz	45-65 Hz	45-65 Hz
External Supply			Not Available	Not Available	Not Available
Supply Voltage			85..300 V AC	85..300 V AC	85..300 V AC
Nominal Frequency			45-65Hz	45-65Hz	45-65Hz
RTC			-	-	√
Communication Type		Modbus RTU	-	-	√

SECTION 2
GENERAL MENU STRUCTURE

Main Menus

MEASURE
↕ (F2/F3)
SETTINGS
↕ (F2/F3)
MEMORY
↕ (F2/F3)
COUNTER
↕ (F2/F3)
DATE-TIME
↕ (F2/F3)
INFO
↕ (F2/F3)
LOGIN

When the device is powered on, the measurement screen is displayed by default.
Press the F1 key to return to the main menu.

The menu structure is general and may vary depending on the model.

Measurements

MEASURE	♩ (F4) ⏎ (F1)	VLN (V ve LN)	→ (F4) ⏎ (F1)	MIN VLN (MIN, V ve LN)	→ (F4) ⏎ (F1)	MAX VLN (MAX, V ve LN)
		↕ (F2/F3)				
		VLL (V ve LL)	→ (F4) ⏎ (F1)	MIN VLL (MIN, V ve LL)	→ (F4) ⏎ (F1)	MAX VLL (MAX, V ve LL)
		↕ (F2/F3)				
		Frequency (Hz)	→ (F4) ⏎ (F1)	MIN Frequency (MIN, Hz)	→ (F4) ⏎ (F1)	MAX Frequency (MAX, Hz)
		↕ (F2/F3)				
		Asymmetry (%)	→ (F4) ⏎ (F1)	MIN Asymmetry (MIN, %)	→ (F4) ⏎ (F1)	MAX Asymmetry (MAX, %)

The voltage, frequency, and calculated asymmetry values measured by the device, as well as the minimum and maximum values of these parameters, are displayed under this menu.

in **"Measurements"** menu, pressing and holding the **F1** and **F4** keys simultaneously for **2 seconds** will restart the device.

Settings

There are a total of 8 submenus in the Settings main menu. Under these menus, device, mains, communication, operation mode, alarm, relay output, and security settings are configured.

SETTING	♩ (F4) ⏎ (FI)	DEVICE
		↕ (F2/F3)
		NETWORK
		↕ (F2/F3)
		RS485
		↕ (F2/F3)
		Mod
		↕ (F2/F3)
		ALARM
		↕ (F2/F3)
		OUTPUT
		↕ (F2/F3)
		SECURITY
		↕ (F2/F3)
		CLEAR

Device Settings

SETTING	♩ (F4) ⏎ (FI)	DEVICE	♩ (F4) ⏎ (FI)	LANG-DIL	→ (F4) ⏎ (FI)	Türkçe (TR)
						English (EN)
				↕ (F2/F3)		
				BL STATE (Back Light Status)	→ (F4) ⏎ (FI)	OFF
						ON
						TIME
				↕ (F2/F3)		
				BL TIME (Back Light Time)	→ (F4) ⏎ (FI)	10 .. 600 sn
				↕ (F2/F3)		
				START DLY (Start Delay)	→ (F4) ⏎ (FI)	0 .. 60 sn

- The device language setting is configured under the **Language (Lang)** menu.
- The backlight status is configured from the LIGHT MODE menu. Three different settings are available:
  - Always off
  - Always on
  - Time-dependent
- If the backlight mode is set to time-dependent, the duration for which the display remains active is selected from this menu.
  - If no key is pressed during the defined period, the backlight turns off. If a key is pressed within this period, the timer is reset and starts again.

Mains Settings

SETTING	♩ (F4) ⏎ (FI)	NETWORK	♩ (F4) ⏎ (FI)	CONN TYPE	♩ (F4) ⏎ (FI)	1P2W
						↕ (F2/F3)
						2P2W
						↕ (F2/F3)
						3P3W
						↕ (F2/F3)
						2P3W
						↕ (F2/F3)
						3P4W
				↕ (F2/F3)		
				NOM VOLT (Nominal Voltage)	→ (F4) ⏎ (FI)	85..500
				↕ (F2/F3)		
				NOM FREQ (Nominal Frequency)	→ (F4) ⏎ (FI)	50 Hz
						↕ (F2/F3)
						60 Hz

Under this menu, the settings related to the mains to which the device will be connected are configured.

- The Connection Type is set under the CONNECTION menu. Depending on the model, the following options can be selected:
  - 1P2W
  - 2P2W
  - 3P3W
  - 3P2W
  - 3P4W
- The nominal voltage of the mains to be connected is set under NOM GRLM.
- The nominal frequency of the mains to be connected is set under NOM FREK.

Serial Communication Settings

SETTING	♩ (F4) ⏎ (FI)	RS485	♩ (F4) ⏎ (FI)	Slave ID (ID)	→ (F4) ⏎ (FI)	1 .. 247
				↕ (F2/F3)		
				BAUDRATE	→ (F4) ⏎ (FI)	1200 2400 4800 9600 19200 38400 57600 115200
				↕ (F2/F3)		
				PARITY	→ (F4) ⏎ (FI)	NONE ODD EVEN
				↕ (F2/F3)		
				DATA TYPE	→ (F4) ⏎ (FI)	Big Endian (BE) Little Endian (LE) Big Endian Byte Swap (BE SWP) Little Endian Byte Swap (LE SWP)

The device is optionally equipped with an RS485 (Modbus RTU) interface. Modbus settings can be configured under this menu.Slave ID

- Baudrate
  - 1200
  - 2400
  - 4800
  - 9600
  - 19200
  - 38400
  - 57600
  - 115200
- Parity
  - None Parity
  - Odd Parity
  - Even Parity
- Data Type
  - Big Endian (BE)
  - Little Endian (LE)
  - Big Endian Byte Swap (BE SWP)
  - Little Endian Byte Swap (LE SWP)

Once does not include a stop bit setting. It operates with both 1 stop bit and 2 stop bits

Operation

SETTING	▼ (F4) ⏎ (FI)	MOD	▼ (F4) ⏎ (FI)	OPERATION 1
				OPERATION 1

Two different operating modes can be selected on the device.

Operation 1:
This is the default operating mode of the device. In case of an alarm condition (such as user-defined high/low voltage, etc.), the device takes action via its relay outputs.

Operation 2: When this mode is selected, the device operates as follows:

- If there are no Phase Loss, Phase Sequence, or Asymmetry faults, Relay 1 is activated.
- When a Phase Sequence change occurs, Relay 1 is deactivated and Relay 2 is activated after a 5-second delay time.
- In case of a Phase Sequence fault, it is indicated on the display with the ‘S’ icon.
- In case of Phase Loss, both Relay 1 and Relay 2 are deactivated immediately without any delay time.
- When the voltage imbalance between phases exceeds 20%, the active relay is deactivated after a 5-second delay time, and the ‘A’ icon is displayed.

- When the Asymmetry fault is cleared, Relay 1 or Relay 2 is activated again after a 5-second delay time, depending on the Phase Sequence.

Alarm Settings

SETTING	♩ (F4) ⏎ (Fl)	ALARM	♩ (F4) ⏎ (Fl)	OVER VOLT ↕ (F2/F3) UNDR VOLT ↕ (F2/F3) OVER FREQ ↕ (F2/F3) UNDR FREQ ↕ (F2/F3) PHASE LST ↕ (F2/F3) SEQUENCE ↕ (F2/F3) ASYMMETRY ↕ (F2/F3) PTC SHORT ↕ (F2/F3) PTC OVER

,

Depending on the model, alarms can be assigned to the following parameters: High Voltage

- Low Voltage
- High Frequency
- Low Frequency
- Phase Loss
- Phase Sequence
- Asymmetry
- PTC Short Circuit
- PTC High Value

High Voltage Settings

SETTING	↓ (F4) ⏎ (F1)	ALARM	↓ (F4) ⏎ (F1)	OVER VOLT	↓ (F4) ⏎ (F1)	STATUS	ON OFF
						↕ (F2/F3)	
						LIMIT	85 - 300 VLN (147 - 520 VLL)
						↕ (F2/F3)	
						HYST	0 - 300 VLN (0 - 520 VLL)
						↕ (F2/F3)	
						DELAY	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

If an alarm is to be assigned to the High Voltage parameter, the following settings must be configured:

- Status
  - If the relevant parameter is to be assigned as an alarm, this option must be set to “ON”. The default status value is “ON”
    - ON
    - OFF
- Limit
  - The High Voltage limit is set in this menu. Limits vary depending on LN or LL connection type. The default limit value is “264 V”.
    - When LN connection types are selected: 85..300 V
    - When LL connection types are selected: 147..520 V
- Hysteresis
  - The hysteresis value is selected in this menu. Limits vary depending on LN or LL connection type. The default hysteresis value is “5 V”
    - When LN connection types are selected: 0..300 V
    - When LL connection types are selected: 0..520 V
- Delay
  - The waiting time required for the alarm to be recognized. The default value is “5 s”
    - 0..999 s
- Relay Assignment
  - The relay that will take action when the alarm occurs is selected here. The default value is “Relay 1”.
    - Off

- Relay 1
- Relay 2

- Logging
  - If the alarm is to be recorded, the relevant selection is made here.
    - ON
    - OFF

Low Voltage Settings

SETTING	↓ (F4) ⏎ (F1)	ALARM	↓ (F4) ⏎ (F1)	UNDR VOLT	↓ (F4) ⏎ (F1)	STATUS	ON OFF
						↕ (F2/F3)	
						LIMIT	85 - 300 VLN (147 - 520 VLL)
						↕ (F2/F3)	
						HYST	0 - 300 VLN (0 - 520 VLL)
						↕ (F2/F3)	
						DELAY	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

If an alarm is to be assigned to the Low Voltage parameter, the following settings must be configured:

- Status
  - If the relevant parameter is to be assigned as an alarm, this option must be set to “ON”.The default status value is “ON”.
    - ON
    - OFF
- Limit
  - The Low Voltage limit is set here. Limits vary depending on the LN or LL connection type. The default limit value is “195 V”
    - For LN connection types: 85..300 V
    - For LL connection types: 147..520 V
- Hysteresis
  - The hysteresis value is selected under this menu. Limits vary depending on the LN or LL connection type. The default hysteresis value is “5 V”.
    - For LN connection types: 0..300 V
    - For LL connection types: 0..520 V
- Delay
  - The waiting time required for the alarm to be detected.
    The default value is “5 s”.
    - 0..999 s
- Relay Assignment

- The relay that will take action when the alarm occurs is selected here. The default value is “Relay 1”.
  - Off
  - Relay 1
  - Relay 2

- Record
  - Select whether the alarm should be recorded.
    - ON
    - OFF

High Frequency Settings

SETTING	♩ (F4) ⏎ (F1)	ALARM	♩ (F4) ⏎ (F1)	OVER FREQ	♩ (F4) ⏎ (F1)	STATUS	ON OFF
						↕ (F2/F3)	
						LIMIT	45-65 Hz
						↕ (F2/F3)	
						HYST	0-65 Hz
						↕ (F2/F3)	
						DELAY	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

If an alarm is to be assigned to the High Frequency parameter, the following settings must be configured on the device:

- Status
  - If the relevant parameter is to be assigned as an alarm, this setting must be set to “ON”.The default status value is “ON”.
    - ON
    - OFF
- Limit
  - High Frequency limit is set here. The default limit value is “51 Hz”.
    - 45..65 Hz
- Hysteresis
  - The hysteresis value is selected from this menu. The default hysteresis value is “2 Hz”
    - 0..65 Hz
- Delay
  - The waiting time required for the alarm to be detected. The default value is “5 s”.
    - 0..999 s
- Relay Assignment
  - The relay that will take action when the alarm occurs is selected here. The default value is **“Relay 1”**.

- Off
- Relay 1
- Relay 2

- Record
  - This option is used to determine whether the alarm will be recorded
    - ON
    - OFF

Low Frequency Settings

SETTING	♩ (F4) ⏎ (F1)	ALARM	♩ (F4) ⏎ (F1)	UNDR FREQ	♩ (F4) ⏎ (F1)	STATUS	ON OFF
						↕ (F2/F3)	
						LIMIT	45-65 Hz
						↕ (F2/F3)	
						HYST	0-65 Hz
						↕ (F2/F3)	
						DELAY	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

To assign an alarm to the Low Frequency parameter, the following settings must be configured:

- Status
  - To enable this parameter as an alarm, set this option to ON.
    - ON
    - OFF
- Limit
  - Sets the Low Frequency limit. Default value: 49 Hz
    - 45..65 Hz
- Hysteresis
  - The hysteresis value is set under this menu. Default value: 2 Hz
    - 0..65 Hz
- Delay
  - The waiting time required for alarm detection. Default value: 5 s
    - 0..999 s
- Relay Assignment
  - Selects the relay that will take action when the alarm occurs.
    - Off
    - Relay 1
    - Relay 2
- Logging
  - Select whether the alarm will be recorded.

- ON
- OFF

Phase Loss

SETTING	♩ (F4) ⏎ (F1)	ALARM	♩ (F4) ⏎ (F1)	PHASE LST	♩ (F4) ⏎ (F1)	STATUS	ON OFF
						↕ (F2/F3)	
						LIMIT	85-520V AC
						↕ (F2/F3)	
						DELAY	0-520V AC
						↕ (F2/F3)	
						RELAY NUM	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

If an alarm is to be assigned to the Phase Loss parameter, the following settings must be configured:

- Status
  - If the relevant parameter is to be assigned as an alarm, this option must be set to "ON". The default status value is "ON"
    - ON
    - OFF
- Limit
  - The Phase Loss limit is set here. The default limit value is "92 V".
    - 85..520V
- Hysteresis
  - The hysteresis value is selected from this menu. The default hysteresis value is "5 V".
    - 0..520V
- Delay
  - The waiting time required for the alarm to be recognized. The default value is "5 s".
    - 0..999 s
- Relay Assignment
  - The relay that will take action when an alarm occurs is selected here.
    The default value is "Relay 1".
    - Off
    - Relay 1
    - Relay 2
- Record
  - If the alarm is to be recorded, the relevant selection is made here.
    - ON
    - OFF

Phase Sequence

SETTING	♩ (F4) ⏎ (F1)	ALARM	♩ (F4) ⏎ (F1)	SEQUENCE	♩ (F4) ⏎ (F1)	STATUS	ON OFF
						↕ (F2/F3)	
						DELAY	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

If an alarm is to be assigned to the Phase Sequence parameter, the following settings must be configured on the device:

- Status
  - To assign this parameter as an alarm, set this option to ON. The default status value is ON.
    - ON
    - OFF
- Delay
  - The waiting time required for the alarm to be recognized. The default value is **5 s**.
    - 0..999 s
- Relay Assignment
  - The relay that will take action when the alarm occurs is selected here. The default value is Relay 1.
    - Off
    - Relay 1
    - Relay 2
- Record
  - Select this option if the alarm is to be logged.
    - ON
    - OFF

Asymmetry

SETTING	♩ (F4) ⏎ (FI)	ALARM	♩ (F4) ⏎ (FI)	ASYMMETRY	♩ (F4) ⏎ (FI)	STATUS	ON OFF
						↕ (F2/F3)	
						LIMIT	0-30%
						↕ (F2/F3)	
						HYST	0-30%
						↕ (F2/F3)	
						DELAY	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

If an alarm is to be assigned to the Asymmetry parameter in the device, the following settings must be configured.

- Status
  - To enable alarm assignment for this parameter, set this option to ON. The default status value is ON.
    - ON
    - OFF
- Limit
  - The Asymmetry limit is set in this menu. The default limit value is 15%.
    - 0..30%
- Hysteresis
  - The hysteresis value is set in this menu. The default hysteresis value is 2%.
    - 0..30%
- Delay
  - This is the waiting time required for the alarm to be recognized. The default value is 5 s.
    - 0..999 s
- Relay Assignment
  - The relay that will take action when an alarm occurs is selected here. The default value is Relay 1.
    - Off
    - Relay 1
    - Relay 2
- Logging
  - This option is used to enable or disable alarm logging.
    - ON
    - OFF

PTC Short Circuit

SETTING	↲ (F4) ⏎ (F1)	ALARM	↲ (F4) ⏎ (F1)	PTC SHORT	↲ (F4) ⏎ (F1)	STATUS	ON OFF
						↕ (F2/F3)	
						DELAY	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

If an alarm is to be assigned to the PTC Short Circuit parameter in the device, the following settings must be configured.

- Status
  - To enable alarm assignment for this parameter, set this option to ON. The default status value is ON.
    - ON
    - OFF
- Delay
  - This is the waiting time required to confirm the alarm condition. The default value is 5 s.
    - 0..999 s
- Relay Assignment
  - Select the relay that will take action when the alarm occurs. The default value is Relay 1.
    - Off
    - Relay 1
    - Relay 2
- Logging
  - Select this option if the alarm is required to be recorded.
    - ON
    - OFF

PTC High Value

SETTING	↲ (F4) ⏎ (F1)	ALARM	↲ (F4) ⏎ (F1)	PTC OVER	↲ (F4) ⏎ (F1)	STATUS	ON OFF
						↕ (F2/F3)	
						DELAY	0-999 sn
						↕ (F2/F3)	
						RELAY NUM	Off RELAY 1 RELAY 2
						↕ (F2/F3)	
						LOG	ON OFF

If an alarm is to be assigned to the PTC High Value parameter in the device, the following settings must be configured.

- Status
  - To enable alarm assignment for this parameter, set this option to ON. The default status value is ON.
    - ON
    - OFF
- Delay
  - The waiting time required for the alarm to be detected. The default value is 5 s.
    - 0..999 s
- Relay Assignment
  - Select the relay that will take action when the alarm occurs. The default value is Relay 1.
    - Off
    - Relay 1
    - Relay 2
- Logging
  - Select this option if the alarm is to be recorded.
    - ON
    - OFF

Output Settings

SETTING	♩ (F4) ⏎ (F1)	OUTPUT	♩ (F4) ⏎ (F1)	RELAY 1	♩ (F4) ⏎ (F1)	LATCH	ON OFF
						↕ (F2/F3)	
						ACTION	ALARM NORMAL
						↕ (F2/F3)	
						DELAY	1-999 sn
				↕ (F2/F3)			
				RELAY 2	♩ (F4) ⏎ (F1)	LATCH	ON OFF
						↕ (F2/F3)	
						ACTION	ALARM NORMAL
						↕ (F2/F3)	
						DELAY	1-999 sn

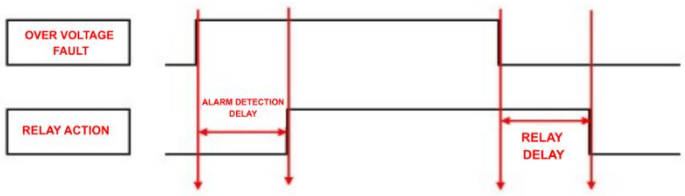
If an alarm is assigned to any relay in the Alarm Settings menu, the operation of the relays when an alarm condition occurs is configured under this menu. The following parameters can be set separately for both relays.

- Latch
  - Latch mode determines whether the output remains continuously active after an alarm occurs.
    - If Latch mode is ON:
      - When a fault occurs, the relay remains continuously in the fault state.
      - After the fault is cleared, the device must be reset to release the relay from the fault state.
    - If Latch mode is OFF:
      - The relay operates only during the fault condition.
      - After the fault condition is cleared, the relay automatically returns to its normal state.
    - Default value is OFF

in “Measurements” menu, pressing and holding the F1 and F4 keys simultaneously for 2 seconds will restart the device.

- Action
  - This parameter selects the condition under which the relay will be active.
    - If Alarm is selected, the related relay becomes active when an alarm occurs.
    - If Normal is selected, the related relay remains active when there is no alarm condition.
- Delay
  - This parameter sets the delay time after a fault is cleared before the rate changes.

There are delay settings in both the alarm settings and the output settings



Security Settings

SETTING	↓ (F4) ⏎ (FI)	SECURITY	↓ (F4) ⏎ (FI)	PROTECT	→ (F4) ⏎ (FI)	ON OFF
				↕ (F2/F3)		
				PASSWORD	→ (F4) ⏎ (FI)	0000 .. 9999

Password protection activation and the password are configured under this menu.

Clear

SETTING	↓ (F4) ⏎ (FI)	CLEAR	↓ (F4) ⏎ (FI)	ALL	→ (F4) ⏎ (FI)	YES NO
				↕ (F2/F3)		
				SETTING	→ (F4) ⏎ (FI)	YES NO
				↕ (F2/F3)		
				MEMORY	→ (F4) ⏎ (FI)	YES NO
				↕ (F2/F3)		
				COUNTRERS	→ (F4) ⏎ (FI)	YES NO

Deletion operations are performed in this menu

- All
  - o Reset settings to default
  - o Clear data stored in memory
  - o Clear relay and power interruption counters
- Settings
  - Reset settings to default
- Memory
  - Clear data assigned to memory
- Counters
  - Clear relay and power outage counters

Date and Time

DATE - TIME	↓ (F4) ⏎ (FI)	YEAR	→ (F4) ⏎ (FI)	00 .. 99
		↕ (F2/F3)		
		MONTH	→ (F4) ⏎ (FI)	1 .. 12
		↕ (F2/F3)		
		DAY	→ (F4) ⏎ (FI)	1 .. 31
		↕ (F2/F3)		
		HOUR	→ (F4) ⏎ (FI)	00 .. 23
		↕ (F2/F3)		
		MINUTE	→ (F4) ⏎ (FI)	00 .. 59
		↕ (F2/F3)		
		SECOND	→ (F4) ⏎ (FI)	00 .. 59

In models equipped with RTC, the date and time information can be monitored and modified in this menu.

Only after changing the date and time settings, the device does not reset. The changes take effect immediately.

Information

INFO	√ (F4) ⏎ (Fl)	ORDER NO
		↕ (F2/F3)
		SERIAL NO
		↕ (F2/F3)
		FW VER
		↕ (F2/F3)
		HW VER
		↕ (F2/F3)
		MDBS VER

Device-related information is displayed under this menu.

- Order No
- Serial No
- Firmware version
- Hardware version
- Mobdus version

Login

LOGIN	**√ (F4)** **⏎ (F1)**	

If password protection in the security settings is active, the password must be entered from this section in order to make any setting changes on the device.

SECTION 3
MODBUS TABLES

Modbus Tables

Instantaneous Values							
No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
1	0	Voltage V1 LN	32 bit float	R	03H	V	
2	2	Voltage V2 LN	32 bit float	R	03H	V	
3	4	Voltage V3 LN	32 bit float	R	03H	V	
4	6	Voltage V12 LL	32 bit float	R	03H	V	
5	8	Voltage V23 LL	32 bit float	R	03H	V	
6	10	Voltage V31 LL	32 bit float	R	03H	V	
7	12	Frequency	32 bit float	R	03H	Hz	
8	14	Asymmetry	32 bit float	R	03H	%	

Max - Min							
No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
1	50	Min Voltage V1 LN	32 bit float	R	03H	V	
2	52	Min Voltage V2 LN	32 bit float	R	03H	V	
3	54	Min Voltage V3 LN	32 bit float	R	03H	V	
4	56	Min Voltage V12 LL	32 bit float	R	03H	V	
5	58	Min Voltage V23 LL	32 bit float	R	03H	V	
6	60	Min Voltage V31 LL	32 bit float	R	03H	V	
7	62	Min Frequency	32 bit float	R	03H	Hz	
8	64	Min Asymmetry	32 bit float	R	03H	%	
9	66	Max Voltage V1 LN	32 bit float	R	03H	V	
10	68	Max Voltage V2 LN	32 bit float	R	03H	V	
11	70	Max Voltage V3 LN	32 bit float	R	03H	V	
12	72	Max Voltage V12 LL	32 bit float	R	03H	V	
13	74	Max Voltage V23 LL	32 bit float	R	03H	V	
14	76	Max Voltage V31 LL	32 bit float	R	03H	V	
15	78	Max Frequency	32 bit float	R	03H	Hz	
16	80	Max Asymmetry	32 bit float	R	03H	%	

Counters & Flag							
No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
1	100	Relay 1 Switching Count	32 bit int	R	03H		

2	102	Relay 2 Switching Count	32 bit int	R	03H		
3	104	Power Interruption Count	32 bit int	R	03H		
4	106	Alarm Flags	16 bit int	R	03H	SB1	

SB1 Values Description	
1	Phase Loss Alarm Flag
2	Asymmetry Alarm Flag
4	Phase Sequence Alarm Flag
8	Overvoltage Alarm Flag
16	Undervoltage Alarm Flag
32	High Frequency Alarm Flag
64	Low Frequency Alarm Flag
128	PTC Short Circuit Fault Alarm Flag
256	PTC High Value Fault Alarm Flag

Memory							
No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
1	200	Record 1 Voltage V1 LN	32 bit float	R	03H	V	
2	202	Record 1 Voltage V2 LN	32 bit float	R	03H	V	
3	204	Record 1 Voltage V3 LN	32 bit float	R	03H	V	
4	206	Record 1 Voltage V12 LL	32 bit float	R	03H	V	
5	208	Record 1 Voltage V23 LL	32 bit float	R	03H	V	
6	210	Record 1 Voltage V31 LL	32 bit float	R	03H	V	
7	212	Record 1 Frequency	32 bit float	R	03H	Hz	
8	214	Record 1 Asymmetry	32 bit float	R	03H	%	
9	216	Record 1 Alarm Flag	16 bit int	R	03H	A1	
10	217	Record 1 Relay No	16 bit int	R	03H	A2	
11	218	Record 1 Day	16 bit int	R	03H		
12	219	Record 1 Month	16 bit int	R	03H		
13	220	Record 1 Year	16 bit int	R	03H		
14	221	Record 1 Hour	16 bit int	R	03H		
15	222	Record 1 Minute	16 bit int	R	03H		
16	223	Record 1 Second	16 bit int	R	03H		
17	224	Record 2 Voltage V1 LN	32 bit float	R	03H	V	
18	226	Record 2 Voltage V2 LN	32 bit float	R	03H	V	
19	228	Record 2 Voltage V3 LN	32 bit float	R	03H	V	
20	230	Record 2 Voltage V12 LL	32 bit float	R	03H	V	
21	232	Record 2 Voltage V23 LL	32 bit float	R	03H	V	
22	234	Record 2 Voltage V31 LL	32 bit float	R	03H	V	
23	236	Record 2 Frequency	32 bit float	R	03H	Hz	
24	238	Record 2 Asymmetry	32 bit float	R	03H	%	

No		Parameter	Data Type	Read / Write	Function	Description	Default
25	240	Record 2 Alarm Flag	16 bit int	R	03H	A1	
26	241	Record 2 Relay No	16 bit int	R	03H	A2	
27	242	Record 2 Day	16 bit int	R	03H		
28	243	Record 2 Month	16 bit int	R	03H		
29	244	Record 2 Year	16 bit int	R	03H		
30	245	Record 2 Hour	16 bit int	R	03H		
31	246	Record 2 Minute	16 bit int	R	03H		
32	247	Record 2 Second	16 bit int	R	03H		
33	248	Record 3 Voltage V1 LN	32 bit float	R	03H	V	
34	250	Record 3 Voltage V2 LN	32 bit float	R	03H	V	
35	252	Record 3 Voltage V3 LN	32 bit float	R	03H	V	
36	254	Record 3 Voltage V12 LL	32 bit float	R	03H	V	
37	256	Record 3 Voltage V23 LL	32 bit float	R	03H	V	
38	258	Record 3 Voltage V31 LL	32 bit float	R	03H	V	
39	260	Record 3 Frequency	32 bit float	R	03H	Hz	
40	262	Record 3 Asymmetry	32 bit float	R	03H	%	
41	264	Record 3 Alarm Flag	16 bit int	R	03H	A1	
42	265	Record 3 Relay No	16 bit int	R	03H	A2	
43	266	Record 3 Day	16 bit int	R	03H		
44	267	Record 3 Mounth	16 bit int	R	03H		
45	268	Record 3 Year	16 bit int	R	03H		
46	269	Record 3 Hour	16 bit int	R	03H		
47	270	Record 3 Minute	16 bit int	R	03H		
48	271	Record 3 Second	16 bit int	R	03H		
49	272	Record 4 Voltage V1 LN	32 bit float	R	03H	V	
50	274	Record 4 Voltage V2 LN	32 bit float	R	03H	V	
51	276	Record 4 Voltage V3 LN	32 bit float	R	03H	V	
52	278	Record 4 Voltage V12 LL	32 bit float	R	03H	V	
53	280	Record 4 Voltage V23 LL	32 bit float	R	03H	V	
54	282	Record 4 Voltage V31 LL	32 bit float	R	03H	V	
55	284	Record 4 Frequency	32 bit float	R	03H	Hz	
56	286	Record 4 Asymmetry	32 bit float	R	03H	%	
57	288	Record 4 Alarm Flag	16 bit int	R	03H	A1	
58	289	Record 4 Relay No	16 bit int	R	03H	A2	
59	290	Record 4 Day	16 bit int	R	03H		
60	291	Record 4 Month	16 bit int	R	03H		
61	292	Record 4 Year	16 bit int	R	03H		
62	293	Record 4 Hour	16 bit int	R	03H		
63	294	Record 4 Minute	16 bit int	R	03H		
64	295	Record 4 Second	16 bit int	R	03H		
65	296	Record 5 Voltage V1 LN	32 bit float	R	03H	V	
66	298	Record 5 Voltage V2 LN	32 bit float	R	03H	V	
67	300	Record 5 Voltage V3 LN	32 bit float	R	03H	V	
68	302	Record 5 Voltage V12 LL	32 bit float	R	03H	V	
69	304	Record 5 Voltage V23 LL	32 bit float	R	03H	V	
70	306	Record 5 Voltage V31 LL	32 bit float	R	03H	V	
71	308	Record 5 Frequency	32 bit float	R	03H	Hz	
72	310	Record 5 Asymmetry	32 bit float	R	03H	%	
73	312	Record 5 Alarm Flag	16 bit int	R	03H	A1	
74	313	Record 5 Relay No	16 bit int	R	03H	A2	
75	314	Record 5 Day	16 bit int	R	03H		

No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
76	315	Record 5 Month	16 bit int	R	03H		
77	316	Record 5 Year	16 bit int	R	03H		
78	317	Record 5 Hour	16 bit int	R	03H		
79	318	Record 5 Minute	16 bit int	R	03H		
80	319	Record 5 Second	16 bit int	R	03H		
81	320	Record 6 Voltage V1 LN	32 bit float	R	03H	V	
82	322	Record 6 Voltage V2 LN	32 bit float	R	03H	V	
83	324	Record 6 Voltage V3 LN	32 bit float	R	03H	V	
84	326	Record 6 Voltage V12 LL	32 bit float	R	03H	V	
85	328	Record 6 Voltage V23 LL	32 bit float	R	03H	V	
86	330	Record 6 Voltage V31 LL	32 bit float	R	03H	V	
87	332	Record 6 Frequency	32 bit float	R	03H	Hz	
88	334	Record 6 Asymmetry	32 bit float	R	03H	%	
89	336	Record 6 Alarm Flag	16 bit int	R	03H	A1	
90	337	Record 6 Relay No	16 bit int	R	03H	A2	
91	338	Record 6 Day	16 bit int	R	03H		
92	339	Record 6 Month	16 bit int	R	03H		
93	340	Record 6 Year	16 bit int	R	03H		
94	341	Record 6 Hour	16 bit int	R	03H		
95	342	Record 6 Minute	16 bit int	R	03H		
96	343	Record 6 Second	16 bit int	R	03H		
97	344	Record 7 Voltage V1 LN	32 bit float	R	03H	V	
98	346	Record 7 Voltage V2 LN	32 bit float	R	03H	V	
99	348	Record 7 Voltage V3 LN	32 bit float	R	03H	V	
100	350	Record 7 Voltage V12 LL	32 bit float	R	03H	V	
101	352	Record 7 Voltage V23 LL	32 bit float	R	03H	V	
102	354	Record 7 Voltage V31 LL	32 bit float	R	03H	V	
103	356	Record 7 Frequency	32 bit float	R	03H	Hz	
104	358	Record 7 Asymmetry	32 bit float	R	03H	%	
105	360	Record 7 Alarm Flag	16 bit int	R	03H	A1	
106	361	Record 7 Relay No	16 bit int	R	03H	A2	
107	362	Record 7 Day	16 bit int	R	03H		
108	363	Record 7 Month	16 bit int	R	03H		
109	364	Record 7 Year	16 bit int	R	03H		
110	365	Record 7 Hour	16 bit int	R	03H		
111	366	Record 7 Minute	16 bit int	R	03H		
112	367	Record 7 Second	16 bit int	R	03H		
113	368	Record 8 Voltage V1 LN	32 bit float	R	03H	V	
114	370	Record 8 Voltage V2 LN	32 bit float	R	03H	V	
115	372	Record 8 Voltage V3 LN	32 bit float	R	03H	V	
116	374	Record 8 Voltage V12 LL	32 bit float	R	03H	V	
117	376	Record 8 Voltage V23 LL	32 bit float	R	03H	V	
118	378	Record 8 Voltage V31 LL	32 bit float	R	03H	V	
119	380	Record 8 Frequency	32 bit float	R	03H	Hz	
120	382	Record 8 Asymmetry	32 bit float	R	03H	%	
121	384	Record 8 Alarm Flag	16 bit int	R	03H	A1	
122	385	Record 8 Relay No	16 bit int	R	03H	A2	
123	386	Record 8 Day	16 bit int	R	03H		
124	387	Record 8 Month	16 bit int	R	03H		
125	388	Record 8 Year	16 bit int	R	03H		
126	389	Record 8 Hour	16 bit int	R	03H		

No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
127	390	Record 8 Minute	16 bit int	R	03H		
128	391	Record 8 Second	16 bit int	R	03H		
129	392	Record 9 Voltage V1 LN	32 bit float	R	03H	V	
130	394	Record 9 Voltage V2 LN	32 bit float	R	03H	V	
131	396	Record 9 Voltage V3 LN	32 bit float	R	03H	V	
132	398	Record 9 Voltage V12 LL	32 bit float	R	03H	V	
133	400	Record 9 Voltage V23 LL	32 bit float	R	03H	V	
134	402	Record 9 Voltage V31 LL	32 bit float	R	03H	V	
135	404	Record 9 Frequency	32 bit float	R	03H	Hz	
136	406	Record 9 Asymmetry	32 bit float	R	03H	%	
137	408	Record 9 Alarm Flag	16 bit int	R	03H	A1	
138	409	Record 9 Relay No	16 bit int	R	03H	A2	
139	410	Record 9 Day	16 bit int	R	03H		
140	411	Record 9 Month	16 bit int	R	03H		
141	412	Record 9 Year	16 bit int	R	03H		
142	413	Record 9 Hour	16 bit int	R	03H		
143	414	Record 9 Minute	16 bit int	R	03H		
144	415	Record 9 Second	16 bit int	R	03H		
145	416	Record 10 Voltage V1 LN	32 bit float	R	03H	V	
146	418	Record 10 Voltage V2 LN	32 bit float	R	03H	V	
147	420	Record 10 Voltage V3 LN	32 bit float	R	03H	V	
148	422	Record 10 Voltage V12 LL	32 bit float	R	03H	V	
149	424	Record 10 Voltage V23 LL	32 bit float	R	03H	V	
150	426	Record 10 Voltage V31 LL	32 bit float	R	03H	V	
151	428	Record 10 Frequency	32 bit float	R	03H	Hz	
152	430	Record 10 Asymmetry	32 bit float	R	03H	%	
153	432	Record 10 Alarm Flag	16 bit int	R	03H	A1	
154	433	Record 10 Relay No	16 bit int	R	03H	A2	
155	434	Record 10 Day	16 bit int	R	03H		
156	435	Record 10 Month	16 bit int	R	03H		
157	436	Record 10 Year	16 bit int	R	03H		
158	437	Record 10 Hour	16 bit int	R	03H		
159	438	Record 10 Minute	16 bit int	R	03H		
160	439	Record 10 Second	16 bit int	R	03H		

A1 Values Decription	
0	Phase Loss Alarm Flag
1	Asymmetry Alarm Flag
2	Phase Sequence Alarm Flag
3	Overvoltage Alarm Flag
4	Undervoltage Alarm Flag
5	High Frequency Alarm Flag
6	Low Frequency Alarm Flag
7	PTC Short Circuit Fault Alarm Flag
8	PTC High Value Fault Alarm Flag

A2 Values Decription	
0	Off
1	Relay 1

Configuration Activation

Configuraton Activation							
No	Address	Parameter	Data Type	W/R	Function	Unit / Limits	Default
1	15000	Device Password	32 bit int	W	10H	1-999999	1

Configuration

Device Configuration							
No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
1	1500	Language	32 bit int	R/W	03H / 10H	0 = Turkish 1 = English	0
2	1502	Backlight Status	32 bit int	R/W	03H / 10H	0 = Off 1 = Time Dependent 2 = On	1
3	1504	Backlight Duration	32 bit int	R/W	03H / 10H	10 - 600	600
4	1506	Startup Delay	32 bit int	R/W	03H / 10H	0 - 60	5

Mains Configuration							
No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
1	1520	Connection Type	32 bit int	R/W	03H / 10H	0 = 2P2W 1 = 3P3W 2 = 1P2W 3 = 2P3W 4 = 3P4W	4
2	1522	Nominal Voltage	32 bit int	R/W	03H / 10H	85-500	230
3	1524	Nominal Frequency	32 bit int	R/W	03H / 10H	0 = 50Hz 1 = 60Hz	0 = 50

NOTE: If the device is connected in delta, the default Connection Type is 3P3W

Communication Configuration							
No	Adress	Parameter	Data Type	Read / Write	Function	Description	Default
1	1540	Slave ID	32 bit int	R/W	03H / 10H	1 .. 247	1

2	1542	Baudrate	32 bit int	R/W	03H / 10H	0 = 1200 1 = 2400 2 = 4800 3 = 9600 4 = 19200 5 = 38400 6 = 57600	5
3	1544	Parity	32 bit int	R/W	03H / 10H	0 = None 1 = Odd 2 = Even	0
5	1546	Endian	32 bit int	R/W	03H / 10H	0 = Big Endian 1 = Little Endian 2 = Big Endian Byte Swap 3 = Little Endian Byte Swap	0

RTC Configuration							
No	**Adress**	**Parameter**	**Data Type**	**Read / Write**	**Function**	**Description**	**Default**
1	1780	Day	32 bit int	R/W	03H / 10H		
2	1782	Month	32 bit int	R/W	03H / 10H		
3	1784	Year	32 bit int	R/W	03H / 10H		
4	1786	Hour	32 bit int	R/W	03H / 10H		
5	1788	Minute	32 bit int	R/W	03H / 10H		
6	1790	Second	32 bit int	R/W	03H / 10H		
Alarm Configuration							
No	**Adress**	**Parameter**	**Data Type**	**Read / Write**	**Function**	**Description**	**Default**
1	1600	Phase Loss Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
2	1602	Phase Loss Alarm Limit	32 bit int	R/W	03H / 10H	85 - 520	92
3	1604	Phase Loss Alarm Hysteresis	32 bit int	R/W	03H / 10H	0 - 520	5
4	1606	Phase Loss Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
5	1608	Phase Loss Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1
6	1610	Phase Loss Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
7	1620	High Frequency Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
8	1622	High Frequency Alarm Limit	32 bit int	R/W	03H / 10H	45 - 65	51
9	1624	High Frequency Alarm Hysteresis	32 bit int	R/W	03H / 10H	0 - 65	2
10	1626	High Frequency Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
11	1628	High Frequency Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1
12	1630	High Frequency Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1

13	1640	Low Frequency Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
14	1642	Low Frequency Alarm Limit	32 bit int	R/W	03H / 10H	45 - 65	49
15	1644	Low Frequency Alarm Hysteresis	32 bit int	R/W	03H / 10H	0 - 65	2
16	1646	Low Frequency Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
17	1648	Low Frequency Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1
18	1650	Low Frequency Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
19	1660	Asymmetry Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
20	1662	Asymmetry Alarm Limit	32 bit int	R/W	03H / 10H	0-30	15
21	1664	Asymmetry Alarm Hysteresis	32 bit int	R/W	03H / 10H	0-30	2
22	1666	Asymmetry Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
23	1668	Asymmetry Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1
24	1670	Asymmetry Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1

Alarm Configuration							
No	**Adress**	**Parameter**	**Data Type**	**Read / Write**	**Function**	**Description**	**Default**
25	1680	Phase Sequence Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
26	1682	Phase Sequence Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
27	1684	Phase Sequence Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1
28	1686	Phase Sequence Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
29	1700	PTC Short Circuit Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
30	1702	PTC Short Circuit Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
31	1704	PTC Short Circuit Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1
32	1706	PTC Short Circuit Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
33	1720	PTC High Value Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
34	1722	PTC High Value Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
35	1724	PTC High Value Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1
36	1726	PTC High Value Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
37	1740	High Voltage Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	
38	1742	High Voltage Alarm Limit	32 bit int	R/W	03H / 10H	85 - 300	264
39	1744	High Voltage Alarm Hysteresis	32 bit int	R/W	03H / 10H	0 - 300	5
40	1746	High Voltage Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
41	1748	High Voltage Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1

42	1750	High Voltage Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1
43	1760	Low Voltage Alarm Status	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	
44	1762	Low Voltage Alarm Limit	32 bit int	R/W	03H / 10H	85 - 300	195
45	1764	Low Voltage Alarm Hysteresis	32 bit int	R/W	03H / 10H	0 - 300	5
46	1766	Low Voltage Alarm Delay	32 bit int	R/W	03H / 10H	0 - 999	1
47	1768	Low Voltage Alarm Relay Assignment	32 bit int	R/W	03H / 10H	0 = Off 1 = Relay 1	1
47	1770	Low Voltage Alarm Memory Assignment	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	1

Output 1 Configuration							
No	**Adress**	**Parameter**	**Data Type**	**Read / Write**	**Function**	**Description**	**Default**
1	1560	Relay 1 Latch	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	0
2	1562	Relay 1 Action	32 bit int	R/W	03H / 10H	0 = Normal 1 = Alarm	1
3	1564	Relay 1 Delay	32 bit int	R/W	03H / 10H	0 - 999	1

Output 1 Configuration							
No	**Adress**	**Parameter**	**Data Type**	**Read / Write**	**Function**	**Description**	**Default**
1	1570	Relay 2 Latch	32 bit int	R/W	03H / 10H	0 = Passive 1 = Active	0
2	1572	Relay 2 Action	32 bit int	R/W	03H / 10H	0 = Normal 1 = Alarm	1
3	1574	Relay 2 Delay	32 bit int	R/W	03H / 10H	0 - 999	1

Commands

Adress	**Function**	**Type**	**Read / Write**	**Description**
60000	**6H**	**uint16_t**	**wo**	**Command Address**
Value		**Command**		**Description**
1000		Save Configurations		
1100		Restore Factory Settings		
1200		Restart the Device		
1300		Clear All		
1400		Clear Memory Records		
1500		Clear Counters		

SECTION 4
TECHNICAL SPECIFICATIONS

Technical Specifications

TECHNICAL SPECIFICATIONS		
	DPR 3110N, DPR 3120N, DPR 3230N, DPR 3110EN, DPR 3120EN, DPR 3230EN	**DPR 3111N, DPR 3121N, DPR 3231N**
SUPPLY		
Voltage	85..300 V AC	150..500V AC
Frequency	45..65Hz	
Power Consumption	< 4VA	
MEASUREMENT INPUTS		
Voltage	10..300 V AC (L-N) 10..500 V AC (L-L)	10..500 V AC
Frequency	45..65Hz	
RELAY OUTPUT		
Max. Switching Current	10A	
Max. Switching Voltage	250VAC	
Max. Switching Power	1250VA	
PTC INPUT		
Overtemperature Threshold Value	1250 Ω	
Short Circuit Threshold Value	50 Ω	
GENERAL		
Operating Temperature Range	-20°C..+70°C	
Storage Temperature Range	-30°C..+80°C	
Protection Class	IP40 (Front Panel), IP20 (Terminals)	
Relative Humidity	non-condensing %90	

Klemsan

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