

RefleX Protection and Control

RefleX - 1503

Overcurrent protection
Earth Fault voltage protection
Communication (IEC 60 870-5-103)



3-stage Overcurrent
2-stage EF voltage
Model 1503

RefleX Overcurrent and Earth Fault Voltage Protection

In-service displays

By commissioning of the relay the in-service display will show the primary phase currents.
Press 'enter' to switch between the different in-service displays
Chosen in-service display will automatically be default in-service display

In-service display

OC,DEF,Ph-Unb	
IL1	124A
IL2	120A
IL3	123A

In service display
Primary current in phase 1
Primary current in phase 2
Primary current in phase 3

OC,EF	
Uo	0V

Alternative in-service display
Secondary EF-voltage

Reflex Overcurrent and Earth Fault Voltage Protection

Trip records

After a relay trip the display showing date and time of the trip automatically appears. Each trip is automatically assigned a separate serial number. All displays show recordings subsequent to relay tripping. The last five recordings are always stored. By using arrow up/arrow down the user may access all relevant information in the displays below. Only trip records (displays) with active information is stored and/or displayed after a trip.

Trip records

This display is part of the main menu
After selecting a record use 'arrow up' or 'arrow down' to display additional information.
Leave trip records by pressing 'Esc'.

```
Trip 333
2002-12-24
12:13:14.123
Delay 0.05s
```

Header (in this case looking at trip no. 333)
Date of 'trip 333'
Time of 'trip 333'
Delay of 'trip 333'

```
Trip 333
I>  I>>  I>>>*
Uo> Uo>>
```

Trip indication (trip 333)
* indicates type of trip

```
Trip 333
IL1      1400A
IL2      1390A
IL3      1400A
```

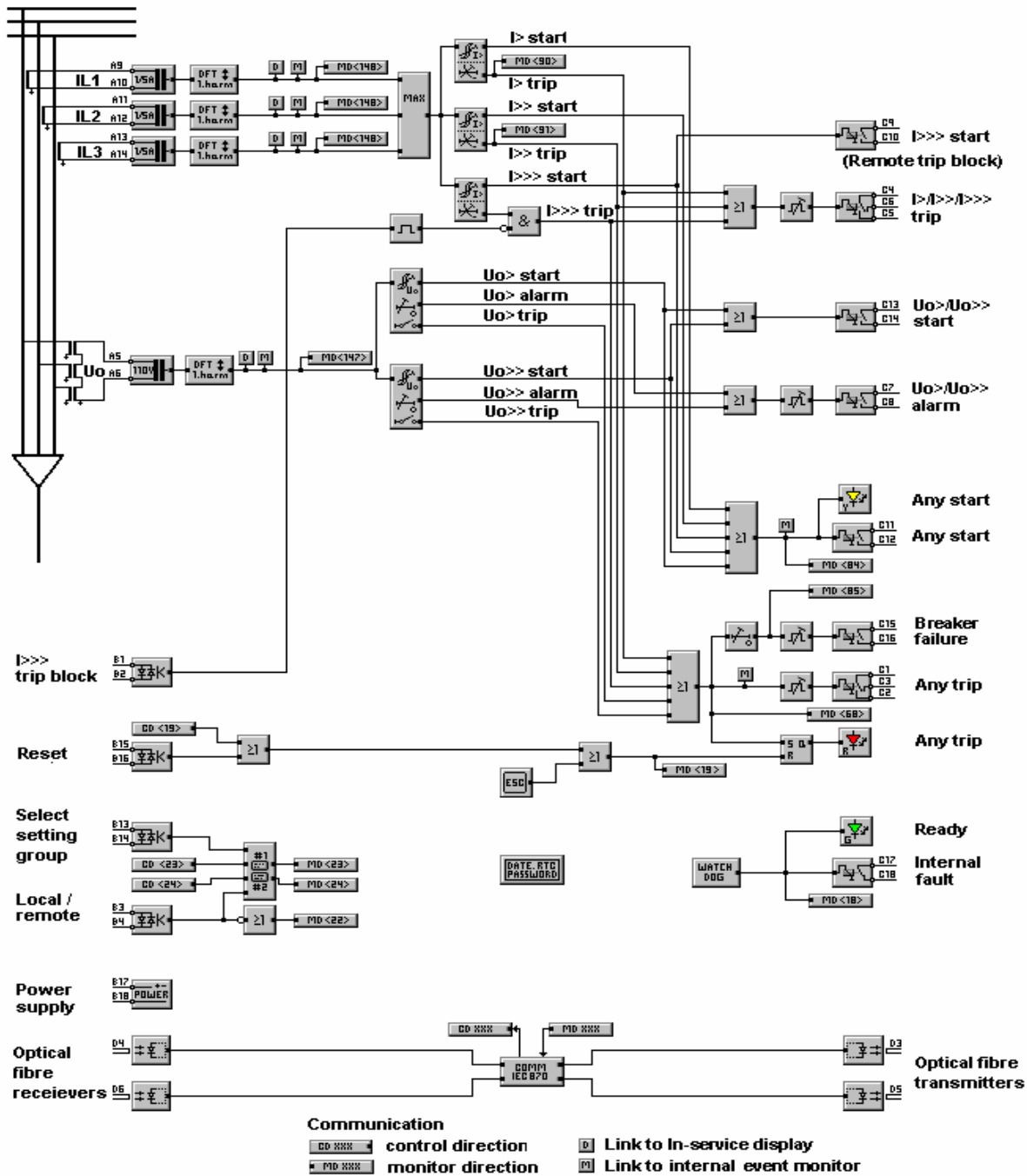
Trip 333
Primary phase current
Primary phase current
Primary phase current

```
Trip 333
Uo              0V
```

Earth fault (trip 333)
EF-voltage

RefleX Overcurrent and Earth Fault Voltage Protection

Logic diagram



RefleX Overcurrent and Earth Fault Voltage Protection

Technical data

Overcurrent protection

Measurement		Three phases
Current settings 1A rated input.	I>, I>>,I>>>	0.200 - 75.0 A and block
Current settings 5A rated input.	I>, I>>,I>>>	1.00 - 375 A and block
Time characteristics		NI, VI, EI, LTI and fasttid
Time multipliers for inverse time characteristics	k>,k>>,k>>>	0.10 - 1.20 and block
Definite time settings	t>,t>>,t>>>	0.01 - 9.99 s and block
Resetting ratio		>0.97
Harmonic measurement		1st harmonic

Earth fault protection (non-directional)

Single measurement (ground-fault voltage)		
Voltage settings	Uo>, Uo>>	1.00 - 170 V
Definite time settings	to>, to>>	0.00 - 9.99 s
Resetting ratio		>0.97
Harmonic measurement		1st harmonic

Breaker failure protection

Trip transfer delay (fixed value)		0.2 s
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Selection between two setting groups

Setting group #1 is active when 'low' input voltage is applied to		Input B13-B14
Setting group #1 can also be selected by signal from comm.		<CD 23>

Setting group #2 is active when 'high' input voltage is applied to		Input B13-B14
Setting group #2 can also be selected by signal from comm.		<CD 24>

Setting group is selected by communication when 'high' input voltage is applied to		Input B3-B4
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System data

Factory default password		1111
Pulse-extension circuit on all trip outputs		0.2 s pulse
Pulse-extension circuit at blocking inputs		50 ms pulse
Rated frequency		50 / 60 Hz

RefleX Overcurrent and Earth Fault Voltage Protection

Technical data

Communication (IEC 60 870-5-103 protocol)

Optical fibre transmitters
Optical fibre receivers

Outputs D3, D5
Inputs D4, D6

Selection of standard information numbers in monitor direction (MDxxx)

	Type	Info.no	ASDU	Gi
Protection inactive (internal fault)	160	18		x
LED-reset	160	19		-
Local parametersettings	160	22		x
Characteristic 1 (selected setting group)	160	23		x
Characteristic 2 (selected setting group)	160	24		x
General trip	160	68		-
General start	160	84		x
Breaker failure	160	85		-
Trip I>	160	90		-
Trip I>>	160	91		-
Measurands IN, VEN	160	147		-
Measurands IL1,2,3	160	148		-

Selection of standard information numbers in control direction (CDxxx)

LED-reset	160	19	
Select setting group 1	160	23	
Select setting group 2	160	24	