

RefleX² Protection and Control

RefleX² - 206

3 phase overcurrent protection
3 phase overvoltage protection
3 phase undervoltage protection
IEC 60 870-5-103 F/O Interface



3-stage OC
2-stage OV/UV
Model 206

Three Stage Overcurrent and 2 stage Over/Under Voltage Protection

Menu (setting group #1)

<p>OC, OV, UV IL1 124A IL2 120A IL3 123A</p>	<p>(See separate description of sub-menu 'In-service displays')</p>	<p>In-service display Press 'enter' to toggle displays Primary current I2 Primary current I3</p>
<p>Trip records</p>	<p>(See separate description of sub-menu 'Trip Records')</p>	<p>Press 'enter' to display recorded data After selecting a record use 'arrow up' or 'arrow down' to display additional information. Leave monitor by pressing 'Esc'.</p>
<p>Low current #1 I> 160/4A t> 1.5s Def.t CT 200/5A In5A</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>Low phase current Setting group # Primary/secondary current set value Delay Characteristic Primary/secondary CT Rated phase current</p>
<p>Med. current #1 I>> 800/20A t>> 0.5s Def.t CT 200/5A In5A</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>Medium phase current Setting group # Primary/secondary current set value Delay Characteristic Primary/secondary CT Rated phase current</p>
<p>High current #1 I>>> 1200/30A t>>> 0.05s Def.t CT 200/5A In5A</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>High phase current Setting group # Primary/secondary current set value Delay Characteristic Primary/secondary CT Rated phase current</p>
<p>U> #1 U> 14000/70.0V t> 1.50s VT 22000/110V</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>U> voltage Setting group # Primary/secondary overvoltage set value Trip delay Primary/secondary VT.</p>
<p>U>> #1 U>> 15200/76.0V t>> 0.500s VT 22000/110V</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>U>> voltage Setting group # Primary/secondary overvoltage set value Trip delay Primary/secondary VT.</p>
<p>t<0.050s #1 U< 10000/50.0V Limit 3000/15.0V VT 22000/110V</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>Trip delay Setting group # Primary/secondary undervoltage set value Lower limit for undervoltage detection Primary/secondary VT.</p>
<p>t<<0.050s #1 U<< 9000/45.0V Limit 3000/15.0V VT 22000/110V</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>Trip delay Setting group# Primary/secondary undervoltage set value Lower limit for undervoltage detection Primary/secondary VT.</p>
<p>Comm. IEC ON Config. Ring Address 1 Meas. Value 1.2</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>Configuration Comm. On/Off Relay address Value of measurand</p>
<p>YMD 2002-05-29 HMS 13:52:36 Password **** Freq. 50Hz</p>	<p>_____</p> <p>_____</p> <p>_____</p>	<p>Year - month - day 24 hour clock Four-digit password Factory default: 1111 Rated power system frequency</p>

*) If the VT is delta connected on the secondary or primary side, or if the relay is delta connected, please note that phase to earth measurement is not applicable.

Three Stage Overcurrent and 2 stage Over/Under Voltage Protection

Menu (setting group #2)

OC, OV, UV IL1 124A IL2 120A IL3 123A	(See separate description of sub-menu 'In-service displays')	In-service display Press 'enter' to toggle displays Primary current I2 Primary current I3
Trip records	(See separate description of sub-menu 'Trip Records')	Press 'enter' to display recorded data After selecting a record use 'arrow up' or 'arrow down' to display additional information. Leave monitor by pressing 'Esc'.
Low current #2 I> 160/5A t> 1.5s Def.t CT 200/5A In5A	<hr/> <hr/> <hr/> <hr/>	Low phase current Setting group # Primary/secondary current set value Delay Characteristic Primary/secondary CT Rated phase current
Med. current #2 I>> 800/25A t>> 0.5s Def.t CT 200/5A In5A	<hr/> <hr/> <hr/> <hr/>	Medium phase current Setting group # Primary/secondary current set value Delay Characteristic Primary/secondary CT Rated phase current
High current #2 I>>> 1200/35A t>>> 0.05s Def.t CT 200/5A In5A	<hr/> <hr/> <hr/> <hr/>	High phase current Setting group # Primary/secondary current set value Delay Characteristic Primary/secondary CT Rated phase current
U> #2 U> 14000/60.0V t> 1.50s VT 22000/110V	<hr/> <hr/> <hr/> <hr/>	U> voltage Setting group # Primary/secondary overvoltage set value Trip delay Primary/secondary VT.
U>> #2 U>> 15200/77.0V t>> 0.500s VT 22000/110V	<hr/> <hr/> <hr/> <hr/>	U>> voltage Setting group # Primary/secondary overvoltage set value Trip delay Primary/secondary VT.
t<0.050s #2 U< 10000/50.0V Limit 3000/15.0V VT 22000/110V	<hr/> <hr/> <hr/> <hr/>	Trip delay Setting group # Primary/secondary undervoltage set value Lower limit for undervoltage detection Primary/secondary VT.
t<<0.100s #2 U<< 9000/45.0V Limit 3000/15.0V VT 22000/110V	<hr/> <hr/> <hr/> <hr/>	Trip delay Setting group# Primary/secondary undervoltage set value Lower limit for undervoltage detection Primary/secondary VT.
Comm. IEC ON Config. Ring Address 1 Meas. Value 1.2	<hr/> <hr/> <hr/> <hr/>	Configuration Comm. On/Off Relay address Value of measurand
YMD 2002-05-29 HMS 13:52:36 Password **** Freq. 50Hz	<hr/> <hr/> <hr/> <hr/>	Year - month - day 24 hour clock Four-digit password Factory default: 1111 Rated power system frequency

*) If the VT is delta connected on the secondary or primary side, or if the relay is delta connected, please note that phase to earth measurement is not applicable.

Three Stage Overcurrent and 2 stage Over/Under 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, OV, UV
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, OV, UV
U1N      22.1kV
U2N      22.1kV
U3N      22.1kV
```

Alternativ in-service display
 Primary Voltage L1 to Earth
 Primary Voltage L2 to Earth
 Primary Voltage L3 to Earth

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>>>*
```

Trip 333
 * indicates type of current-trip

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

Trip 333
 Primary phase current
 Primary phase current
 Primary phase current

```
Trip 333
U>      U>>*
U<      U<<
```

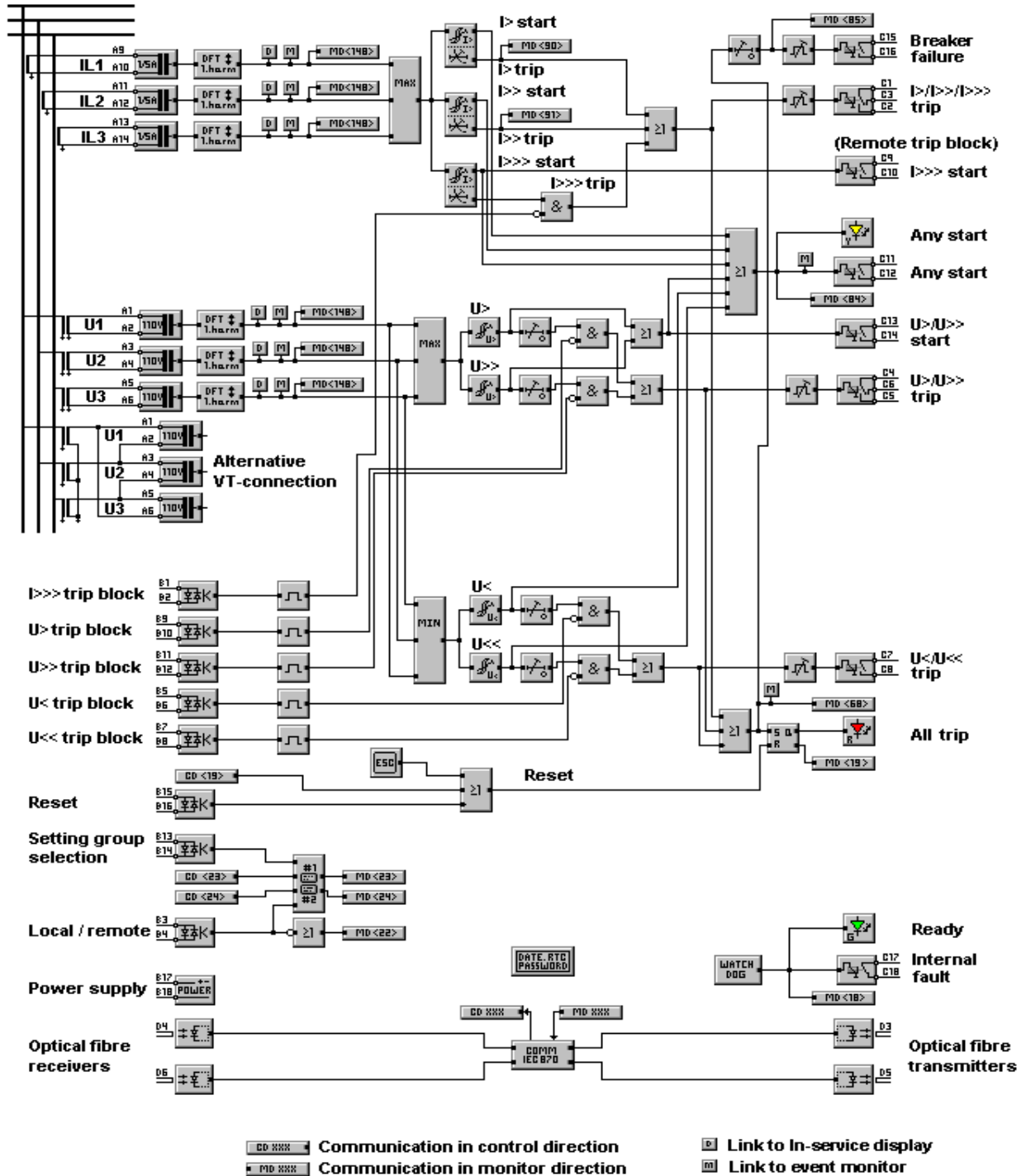
Trip 333
 * indicates type of voltage-trip

```
Trip 333
U1      16,2kV
U2      16,2kV
U3      16,2kV
```

Trip 333
 Primary phase voltage U1
 Primary phase voltage U2
 Primary phase voltage U3

Three Stage Overcurrent and 2 stage Over/Under Voltage Protection

Logic diagram



Source file: 206_PRD_302_UK.bmp

Three Stage Overcurrent and 2 stage Over/Under 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 def. time
Time multipliers k at 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

Overvoltage protection

Measurement		3 phases
Overvoltage settings	U>, U>>	1.00 - 170 V and block
Definite time settings	t>, t>>	0.01 - 999 s and block
Resetting ratio		>0.97
Harmonic measurement		1st harmonic

Undervoltage protection

Measurement		3 phases
Undervoltage settings *)	U<, U<<	1.00 - 170 V and block
Lower limit for undervoltage detection	Limit	1.00 - 99 V and block
Definite time settings	t<, t<<	0.01 - 999 s and block
Resetting ratio		<1.03
Harmonic measurement		1st harmonic

*) The undervoltage levels have to be set higher than the lower limit for undervoltage detection

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 Setting group #1 can also be selected by signal from comm.	Input B13-B14 <CD 23>
Setting group #2 is active when 'high' input voltage is applied to Setting group #2 can also be selected by signal from comm.	Input B13-B14 <CD 24>
Setting group is selected by communication when 'high' input voltage is applied to	Input B3-B4

System data

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

Three Stage Overcurrent and 2 stage Over/Under Voltage Protection

Technical data

Communication (IEC 60 870-5-103 protocol)

Configuration system	Star or Ring
Address of protection equipment	1 to 254
Value of measurand (x In)	1.2 or 2.4

Optical fibre transmitters	Outputs D3,D5
Optical fibre receivers	Inputs D4,D6

Selection of standard information numbers in monitor direction (MDxxx)

	Type	Info.no	ASDU	Gi
Protection active	160	18		x
LED-reset	160	19		-
Local parameters ON	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 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