

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Measuring relays and protection equipment –  
Part 121: Functional requirements for distance protection**

**Relais de mesure et dispositifs de protection –  
Partie 121: Exigences fonctionnelles pour protection de distance**



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## CONTENTS

FOREWORD.....	9
1 Scope.....	11
2 Normative references .....	11
3 Terms and definitions .....	12
4 Specification of the function.....	13
4.1 General.....	13
4.2 Input energizing quantities/energizing quantities .....	13
4.3 Binary input signals.....	14
4.4 Functional logic.....	15
4.4.1 Faulted phase identification .....	15
4.4.2 Directional signals .....	15
4.4.3 Distance protection function characteristics .....	15
4.4.4 Distance protection zone timers .....	16
4.5 Binary output signals .....	16
4.5.1 General .....	16
4.5.2 Start (pickup) signals.....	16
4.5.3 Operate signals .....	17
4.5.4 Other binary output signals.....	17
4.6 Additional influencing functions/conditions .....	17
4.6.1 General .....	17
4.6.2 Inrush current .....	17
4.6.3 Switch onto fault/trip on reclosure.....	17
4.6.4 Voltage transformer (VT) signal failure (loss of voltage).....	17
4.6.5 Power swings .....	18
4.6.6 Behavior during frequencies outside of the operating range.....	18
5 Performance specifications.....	18
5.1 General.....	18
5.2 Effective and operating ranges.....	18
5.3 Basic characteristic accuracy under steady state conditions .....	19
5.3.1 General .....	19
5.3.2 Determination of accuracy related to time delay setting .....	19
5.3.3 Disengaging time.....	20
5.4 Dynamic performance .....	20
5.4.1 General .....	20
5.4.2 Transient overreach (TO).....	20
5.4.3 Operate time and transient overreach (SIR diagrams).....	21
5.4.4 Operate time and transient overreach (CVT-SIR diagrams).....	21
5.4.5 Typical operate time .....	21
5.5 Performance with harmonics .....	22
5.5.1 General .....	22
5.5.2 Steady-state harmonics tests.....	23
5.5.3 Transient LC oscillation tests.....	23
5.6 Performance during frequency deviation .....	23
5.6.1 General .....	23
5.6.2 Steady state testing during frequency deviation .....	23
5.6.3 Transient testing during frequency deviation.....	23
5.7 Double infeed tests .....	24

5.7.1	General .....	24
5.7.2	Single line, double infeed system.....	24
5.7.3	Double line, double infeed system .....	24
5.8	Instrument transformer (CT, VT and CVT) requirements .....	25
5.8.1	General .....	25
5.8.2	CT requirements.....	25
6	Functional tests .....	29
6.1	General.....	29
6.2	Rated frequency characteristic accuracy tests .....	29
6.2.1	General .....	29
6.2.2	Basic characteristic accuracy under steady state conditions .....	40
6.2.3	Basic directional accuracy under steady state conditions .....	43
6.2.4	Determination of accuracy related to time delay setting .....	48
6.2.5	Determination and reporting of the disengaging time .....	48
6.3	Dynamic performance .....	50
6.3.1	General .....	50
6.3.2	Dynamic performance: operate time and transient overreach (SIR diagrams) .....	51
6.3.3	Dynamic performance: operate time and transient overreach (CVT-SIR diagrams) .....	61
6.3.4	Dynamic performance: transient overreach tests.....	65
6.3.5	Dynamic performance: typical operate time .....	69
6.4	Performance with harmonics .....	74
6.4.1	Steady state harmonics tests .....	74
6.4.2	Transient oscillation tests (network simulation L-C) .....	75
6.5	Performance during off-nominal frequency .....	82
6.5.1	Steady state frequency deviation tests.....	82
6.5.2	Transient frequency deviation tests .....	85
6.6	Double infeed tests.....	90
6.6.1	Double infeed tests for single line .....	90
6.6.2	Double infeed tests for parallel lines (without mutual inductance).....	96
6.6.3	Reporting of double infeed test results.....	100
7	Documentation requirements .....	101
7.1	Type test report .....	101
7.2	Documentation.....	101
Annex A (informative)	Impedance characteristics .....	102
A.1	Overview.....	102
A.1.1	General .....	102
A.1.2	Non-directional circular characteristic .....	102
A.1.3	MHO characteristic .....	102
A.1.4	Quadrilateral/polygonal.....	104
A.2	Example characteristics .....	106
A.2.1	General .....	106
A.2.2	Non-directional circular characteristic (ohm) .....	106
A.2.3	Reactive reach line characteristic .....	106
A.2.4	MHO characteristic .....	107
A.2.5	Resistive and reactive intersecting lines characteristic.....	107
A.2.6	Offset MHO characteristic.....	108

Annex B (informative) Informative guide for the behaviour of timers in distance protection zones for evolving faults .....	110
Annex C (normative) Setting example .....	112
Annex D (normative) Calculation of mean, median and mode.....	115
D.1 Mean .....	115
D.2 Median.....	115
D.3 Mode .....	115
D.4 Example.....	115
Annex E (informative) CT saturation and influence on the performance of distance relays .....	116
Annex F (informative) Informative guide for testing distance relays based on CT requirements specification .....	119
F.1 General.....	119
F.2 Test data .....	120
F.3 CT data and CT model.....	121
Annex G (informative) Informative guide for dimensioning of CTs for distance protection .....	125
G.1 General.....	125
G.2 Example 1.....	126
G.3 Example 2.....	128
Annex H (normative) Calculation of relay settings based on generic point P expressed in terms of voltage and current.....	131
H.1 Settings for quadrilateral/polygonal characteristic .....	131
H.2 Settings for MHO characteristic.....	133
Annex I (normative) Ramping methods for testing the basic characteristic accuracy .....	134
I.1 Relationship between simulated fault impedance and analog quantities .....	134
I.2 Pre-fault condition.....	134
I.3 Phase to earth faults .....	134
I.4 Phase to phase faults .....	136
I.5 Ramps in the impedance plane .....	139
I.5.1 Pseudo-continuous ramp .....	139
I.5.2 Ramp of shots .....	140
Annex J (normative) Definition of fault inception angle.....	143
Annex K (normative) Capacitive voltage instrument transformer model .....	145
K.1 General.....	145
K.2 Capacitor voltage transformer (CVT).....	145
Figure 1 – Simplified distance protection function block diagram.....	14
Figure 2 – Basic accuracy specification of an operating characteristic .....	19
Figure 3 – Basic angular accuracy specifications of directional lines.....	20
Figure 4 – SIR diagram – Short line average operate time .....	22
Figure 5 – Fault positions to be considered for specifying the CT requirements .....	26
Figure 6 – Test procedure for basic characteristic accuracy.....	31
Figure 7 – Calculated test points A, B and C based on the effective range of $U$ and $I$ .....	32
Figure 8 – Modified points B' and C' based on the limited setting range.....	32
Figure 9 – Position of test points A, B, C, D and E in the effective range of $U$ and $I$ .....	33
Figure 10 – Position of test points A, B', C', D and E in the effective range of $U$ and $I$ .....	33

Figure 11 – Quadrilateral characteristic showing ten test points .....	34
Figure 12 – Quadrilateral characteristic showing test ramps.....	35
Figure 13 – Quadrilateral characteristic showing accuracy limits .....	36
Figure 14 – Quadrilateral/polygonal characteristic showing accuracy limits .....	37
Figure 15 – MHO characteristic showing nine test points .....	37
Figure 16 – MHO characteristic showing test ramps.....	38
Figure 17 – Accuracy limits for MHO characteristic .....	39
Figure 18 – Basic directional element accuracy tests .....	44
Figure 19 – Directional element accuracy tests in the second quadrant.....	45
Figure 20 – Directional element accuracy tests in the second quadrant.....	46
Figure 21 – Directional element accuracy tests in the fourth quadrant.....	46
Figure 22 – Directional test accuracy lines in the fourth quadrant .....	47
Figure 23 – Position of the three-phase fault for testing the disengaging time .....	49
Figure 24 – Sequence of events for testing the disengaging time .....	50
Figure 25 – Power system network with zero load transfer.....	51
Figure 26 – Dynamic performance: operate time and dynamic overreach (SIR diagram) .....	55
Figure 27 – SIR diagram for short line: minimum operate time .....	56
Figure 28 – SIR diagram for short line: average operate time.....	57
Figure 29 – SIR diagram for short line: maximum operate time .....	57
Figure 30 – Dynamic performance tests (SIR diagram).....	59
Figure 31 – SIR diagram for long line: minimum operate time .....	61
Figure 32 – SIR diagram for long line: average operate time .....	62
Figure 33 – SIR diagram for long line: maximum operate time .....	62
Figure 34 – Dynamic performance: operate time and dynamic overreach (CVT-SIR diagram) .....	64
Figure 35 – CVT-SIR diagram for short line: minimum operate time .....	66
Figure 36 – CVT-SIR diagram for short line: average operate time.....	66
Figure 37 – CVT-SIR diagram for a short line: maximum operate time .....	67
Figure 38 – Fault statistics for typical operate time .....	70
Figure 39 – Frequency distribution of operate time .....	73
Figure 40 – Ramping test for harmonics.....	75
Figure 41 – Steady-state harmonics test .....	77
Figure 42 – Simulated power system network .....	78
Figure 43 – Flowchart of transient oscillation tests.....	79
Figure 44 – Simulated voltages ( $U_{L1}$ , $U_{L2}$ , $U_{L3}$ ) and currents ( $I_{L1}$ , $I_{L2}$ , $I_{L3}$ ) .....	81
Figure 45 – Transient oscillation tests – Operate time.....	82
Figure 46 – Test points for quadrilateral characteristics .....	83
Figure 47 – Test points for MHO characteristic .....	83
Figure 48 – Test ramp direction for quadrilateral characteristic .....	83
Figure 49 – Test ramp direction for MHO characteristic.....	84
Figure 50 – Steady-state frequency deviation tests .....	86
Figure 51 – Short line model for frequency deviation test.....	87
Figure 52 – Flowchart of transient frequency deviation tests .....	89

Figure 53 – SIR diagrams for frequency deviation tests – average operate time.....	90
Figure 54 – Network model for single line tests.....	91
Figure 55 – Line to earth fault.....	92
Figure 56 – Line to line fault.....	92
Figure 57 – Line to line to earth fault.....	92
Figure 58 – Three-phase fault.....	93
Figure 59 – Network model for parallel lines tests.....	98
Figure 60 – Network model for current reversal test.....	99
Figure A.1 – Non-directional circular characteristic with directional supervision.....	102
Figure A.2 – MHO characteristic.....	103
Figure A.3 – Quadrilateral/polygonal characteristics.....	104
Figure A.4 – Non-directional circular characteristic (ohm).....	106
Figure A.5 – Reactive reach line characteristic.....	107
Figure A.6 – MHO characteristics.....	107
Figure A.7 – Resistive and reactive intersecting lines characteristics.....	108
Figure A.8 – Offset MHO.....	108
Figure B.1 – The same fault type evolving from time delayed zone 3 (position 1) into time delayed zone 2 (position 2) after 200 ms.....	110
Figure B.2 – Phase to earth fault in time delayed zone 3 (position 1) evolving into three-phase fault in the same zone (position 2) after 200 ms.....	111
Figure C.1 – Setting example for a radial feeder.....	112
Figure C.2 – Phase to earth fault (LN).....	113
Figure C.3 – Phase to phase fault (LL).....	114
Figure E.1 – Fault positions to be considered for specifying the CT requirements.....	117
Figure F.1 – Fault positions to be considered.....	119
Figure F.2 – Double source network.....	120
Figure F.3 – Magnetization curve for the basic CT.....	122
Figure F.4 – Secondary current at the limit of saturation caused by AC component with no remanent flux in the CT.....	123
Figure F.5 – Secondary current in case of maximum DC offset.....	123
Figure G.1 – Distance relay example 1.....	126
Figure G.2 – Distance relay example 2.....	128
Figure H.1 – Quadrilateral/polygonal characteristic showing test point P on the reactive reach line.....	131
Figure H.2 – Quadrilateral distance protection function characteristic showing test point P on the resistive reach line.....	132
Figure H.3 – MHO characteristic showing test point P.....	133
Figure I.1 – Three-line diagram showing relay connections and L1N fault.....	135
Figure I.2 – Voltage and current phasors for L1N fault.....	135
Figure I.3 – Voltages and currents for L1N fault, constant fault current.....	136
Figure I.4 – Voltages and currents for L1N fault, constant fault voltage.....	136
Figure I.5 – Three-line diagram showing relay connections and L1L2 fault.....	137
Figure I.6 – Voltage and current phasors for L1L2 fault.....	138
Figure I.7 – Voltages and currents for L1L2 fault, constant fault current.....	138
Figure I.8 – Voltages and currents for L1L2 fault, constant fault voltage.....	139

Figure I.9 – Pseudo-continuous ramp distance relay characteristic on an impedance plane .....	140
Figure I.10 – Pseudo-continuous ramp showing impedance step change and the time step .....	140
Figure I.11 – Ramp of shots distance relay characteristic on an impedance plane .....	141
Figure I.12 – Ramp of shots showing impedance step change and the time step .....	142
Figure I.13 – Ramp of shots with binary search algorithm .....	142
Figure J.1 – Graphical definition of fault inception angle .....	143
Figure K.1 – CVT equivalent electrical circuit .....	145
Figure K.2 – Transient response of the 50 Hz version of the CVT model .....	147
Table 1 – Example of effective and operating ranges of distance protection .....	18
Table 2 – Recommended levels of remanence in the optional cases when remanence is considered .....	27
Table 3 – Basic characteristic accuracy for various points (quadrilateral/polygonal) .....	42
Table 4 – Overall basic characteristic accuracy (quadrilateral/polygonal) .....	42
Table 5 – Basic characteristics accuracy for various points (MHO) .....	42
Table 6 – Overall basic characteristic accuracy (MHO) .....	42
Table 7 – Basic directional accuracy for various fault types .....	47
Table 8 – Basic directional accuracy $e_{\alpha\chi}$ .....	47
Table 9 – Results of disengaging time for all the tests .....	50
Table 10 – Short line SIR and source impedance for selected rated current and frequency .....	53
Table 11 – Short line SIR and source impedances for other rated current and frequency .....	54
Table 12 – Long line SIR and source impedances for selected rated current and frequency .....	59
Table 13 – Long line SIR and source impedances for other rated current and frequency .....	60
Table 14 – Short line CVT-SIR source impedance .....	63
Table 15 – Transient overreach table for short line .....	68
Table 16 – Transient overreach table for long line .....	68
Table 17 – Transient overreach table for short line with CVTs .....	69
Table 18 – Typical operate time .....	71
Table 19 – Typical operate time .....	71
Table 20 – Typical operate time .....	72
Table 21 – Typical operate time (mode, median, mean) .....	73
Table 22 – Steady state harmonics test .....	75
Table 23 – Capacitance values .....	78
Table 24 – Quadrilateral/polygonal basic characteristic accuracy at $f_{\min}$ and $f_{\max}$ .....	85
Table 25 – MHO basic characteristic accuracy at $f_{\min}$ and $f_{\max}$ .....	85
Table 26 – Tests without pre-fault load .....	94
Table 27 – Tests with pre-fault load .....	95
Table 28 – Current reversal test .....	98
Table 29 – Evolving faults (only one line affected) .....	99
Table 30 – Evolving faults (both lines affected) .....	100
Table 31 – Double infeed test results .....	101

Table F.1 – Magnetization curve data .....	122
Table G.1 – Fault currents .....	127
Table G.2 – Fault currents .....	128
Table J.1 – Fault type and reference voltage .....	144
Table K.1 – Parameter values for the 50 Hz version of the CVT model .....	146
Table K.2 – Parameter values for the 60 Hz version of the CVT model .....	146

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Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

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A list of all parts in the IEC 60255 series, published under the general title *Measuring relays and protection equipment*, can be found on the IEC website.

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## MEASURING RELAYS AND PROTECTION EQUIPMENT –

### Part 121: Functional requirements for distance protection

#### 1 Scope

This part of IEC 60255 specifies minimum requirements for functional and performance evaluation of distance protection function typically used in, but not limited to, line applications for effectively earthed, three-phase power systems. This standard also defines how to document and publish performance tests.

This standard covers distance protection function whose operating characteristic can be defined on an impedance plane and includes specification of the protection function, measurement characteristics, phase selection, directionality, starting and time delay characteristics.

The test methodologies for verifying performance characteristics and accuracy are included in this standard. The standard defines the influencing factors that affect the accuracy under steady state conditions and performance characteristics during dynamic conditions. It also includes the instrument transformer requirements for the protection function.

The distance protection functions covered by this standard are as follows:

	IEEE/ANSI C37.2 Function numbers	IEC 61850-7-4 Logical nodes
Phase distance protection	21	PDIS
Earth (ground) distance protection	21G	PDIS

This standard does not specify the functional description of additional features often associated with digital distance relays such as power swing blocking (PSB), out of step tripping (OST), voltage transformer (VT) supervision, switch onto fault (SOTF), trip on reclose (TOR), the logic for cross country faults in not effectively earthed networks, and trip conversion logic. Only their influence on the distance protection function is covered in this standard. The protection of series-compensated lines is beyond the scope of this standard.

The general requirements for measuring relays and protection equipment are defined in IEC 60255-1.

#### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60050 (all parts), *International Electrotechnical Vocabulary* (available at <<http://www.electropedia.org>>)

IEC 60255-1, *Measuring relays and protection equipment – Part 1: Common requirements*

IEC 61850 (all parts), *Communication networks and systems for power utility automation*