UNA EMPRESA
RED ELÉCTRICA INTERNACIONAL
Y ENGIE

OMICRON

Informe de Verificación de Protección Eléctrica 87L J7 S1 MiCOM P546

Efectuado por:	Pablo Alvarez Sana	Fecha de Intervencion:	18 de Marzo 2019
	Felix Rivas Lopez		
N° EAP:	n/a	n° PT	PT_PYC_050_2019
Motivo:	Inspección del CEN	Subestación:	TEN
n° orden:		Ubicación Técnica:	Caseta de Control

25/03/2018

Firma Elaborador	Fecha	Firma Supervisor	Fecha

Test Object - Device Settings

Substation/Bay:

Substation:	SE TEN	Substation address:	
Bay:	Diagonal 3 220kV	Bay address:	LT CHANGOS J7

Device:

Name/description:	220 kV Diag. 3	Manufacturer:	ALSTOM (GE)
Device type:	P54681GC6M0760M	Device address:	
Serial/model number:	630638V		
Additional info 1:	Sfw Ref: P546____6A_760_D		
Additional info 2:			

Test Object - Differential Parameters

Protected Object:

Protected Object: Busbar
Vector Group: YY0

Winding/Leg Name:	Primary	Secondary
Voltage:	220,00 kV	220,00 kV
Power:	40,00 MVA	40,00 MVA
Starpoint Grounding:	No	No
Delta-connected CT:	No	No

CT:

Winding/Leg Name:	Primary	Secondary
CT Current Prim:	4000,00 A	4000,00 A
CT Current Sec:	1,00 A	1,00 A
CT Grounding:	tow. Prot. Obj.	tow. Prot. Obj.
Gnd CT Prim Current:	200,00 A	800,00 A
Gnd CT Sec Current:	1,00 A	1,00 A
Gnd CT Grounding:	n/a	n/a

Protection device:

Reference Winding:	Primary		
Ibias Calculation:	(|Ip| + |Is|) / K1 (K1 = 2,00)		
Zero Seq. Elimination:	none		
Reference Current:	CT nominal current		
Ground CT Used:	No		
Idiff>:	0,10 In		
Idiff>>:	4,00 In	tdiff>:	0,03 s
		tdiff>>:	0,03 s
Itol rel:	2,00 %		
Itol abs:	0,05 In	ttol rel:	3,00 %
		ttol abs:	0,01 s

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,04 s	VT connection:	At protected object
TimeTolRel:	5,00 %	CT starpoint connection:	To protected object
CurrentTolAbs:	0,05 Iref		
CurrentTolRel:	5,00 %		
Directional:	Yes		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I>1	IEC Definite Time	1,20 Iref	1,00 s	0,95	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	IN>1 67N	IEC Normal Inverse	0,10 Iref	0,17	0,95	Forward
No	IN>2	IEC Normal Inverse	0,20 Iref	0,30	0,95	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #7	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional
No	I #8	IEC Definite Time	2,00 Iref	1,00 s	0,95	Non Directional
No	I #9	IEC Definite Time	3,00 Iref	1,00 s	0,95	Non Directional

Elements - Zero Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #10	IEC Definite Time	0,33 Iref	1,00 s	0,95	Non Directional
No	I #11	IEC Definite Time	0,67 Iref	1,00 s	0,95	Non Directional
No	I #12	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional

Group:2. Analogics channels tests

2.1 - Injection tests:

Test Object - Device Settings

Substation/Bay:

Substation:	SE TEN	Substation address:	
Bay:	Diagonal 3 220kV	Bay address:	LT CHANGOS J7

Device:

Name/description:	220 kV Diag. 3	Manufacturer:	ALSTOM (GE)
Device type:	P54681GC6M0760M	Device address:	
Serial/model number:	630638V		
Additional info 1:	Sfw Ref: P546____6A_760_D		
Additional info 2:			

Nominal Values:

f nom:	50,00 Hz	Number of phases:	3
V nom (secondary):	115,0 V	V primary:	230,0 kV
I nom (secondary):	1,000 A	I primary:	4,000 kA

Residual Voltage/Current Factors:

VLN / VN:	1,732	IN / I nom:	1,000

Limits:

V max:	300,0 V	I max:	50,00 A

Debounce/Deglitch Filters:

Debounce time:	3,000 ms	Deglitch time:	0,000 s

Overload Detection:

Suppression time:	50,00 ms

Test Object - Other RIO Functions

CB Configuration

Description	Name	Value
CB trip time	CB trip time	50,00 ms
CB close time	CB close time	100,00 ms
Times for 52a, 52b in percent of CB time	52a, 52b % of CB	20,00 %

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	18-mar.-2019 11:29:19	Test End:	18-mar.-2019 11:34:24
User Name:		Manager:	
Company:			

Test Results

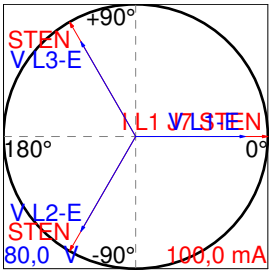
Title: inyección balanceada

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	V L1-E	66,40 V	0,00 °	50,000 Hz
	V L2-E	66,40 V	-120,00 °	50,000 Hz
	V L3-E	66,40 V	120,00 °	50,000 Hz
	I L1 J7 STEN	100,0 mA	0,00 °	50,000 Hz
	I L2 J7 STEN	100,0 mA	-120,00 °	50,000 Hz
	I L3 J7 STEN	100,0 mA	120,00 °	50,000 Hz

Generator Settings

V L1-E	66,400V	0,00°
V L2-E	66,395V	-120,00°
V L3-E	66,400V	120,00°
I L1 J7 STEN	0,100A	0,00°
I L2 J7 STEN	0,100A	-120,00°
I L3 J7 STEN	0,100A	120,00°



Binary Outputs

Name	State
Sal. bin 1	0
Sal. bin 2	0

Binary Inputs

Name	Slope	Time
Trip FA J7 D1	0	
Trip FB J7 D1	0	
Trip FC J7 D1	0	
Trip FA J8 D1	0	
Trip FB J8 D1	0	
Trip FC J8 D1	0	
Trip FA J7 D2	0	
Trip FC J7 D2	0	
Trip FA J8 D2	0	
Trip FC J8 D2	0	
Overload	0	

Analog Inputs

VDCin	IDCin
-0,0001V	-0,0001mA

Comment

CORRECTA

Synchronized mode (Synchronization to external signal failed)

Assessment

Passed 18-mar.-2019 11:31:43

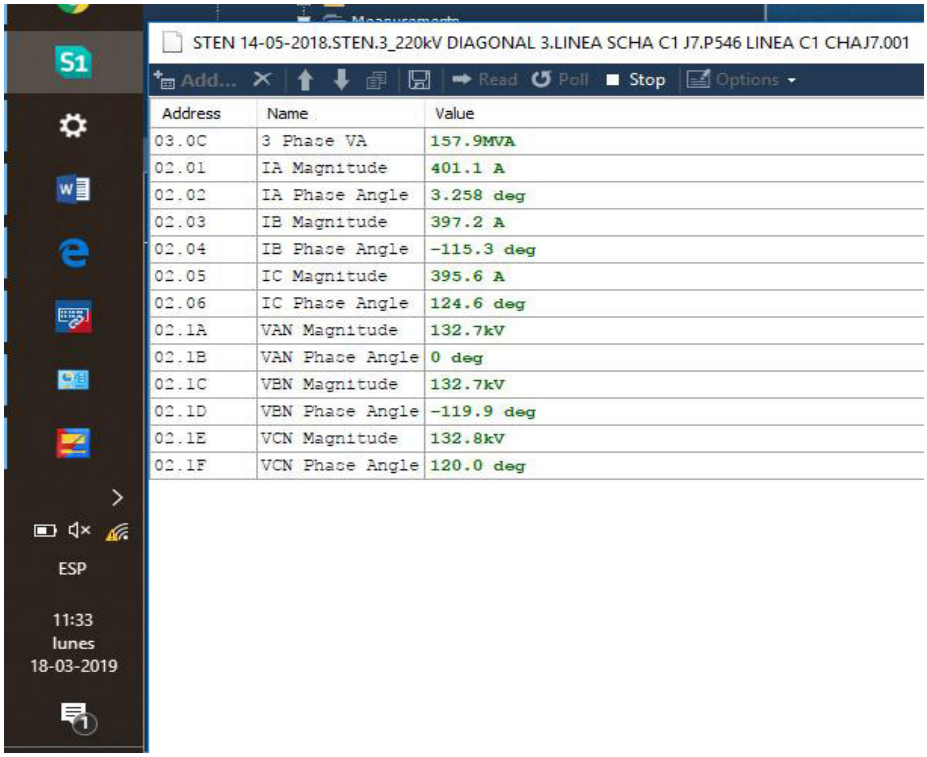
Comment

Summary

1 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

MEDIDAS DE LA PROTECCIÓN INYECCIÓN BALANCEADA



Address	Name	Value
03.0C	3 Phase VA	157.9MVA
02.01	IA Magnitude	401.1 A
02.02	IA Phase Angle	3.258 deg
02.03	IB Magnitude	397.2 A
02.04	IB Phase Angle	-115.3 deg
02.05	IC Magnitude	395.6 A
02.06	IC Phase Angle	124.6 deg
02.1A	VAN Magnitude	132.7kV
02.1B	VAN Phase Angle	0 deg
02.1C	VBN Magnitude	132.7kV
02.1D	VBN Phase Angle	-119.9 deg
02.1E	VCN Magnitude	132.8kV
02.1F	VCN Phase Angle	120.0 deg

2.1 - Injection DESBALAN:

Test Object - Device Settings

Substation/Bay:

Substation:	SE TEN	Substation address:	
Bay:	Diagonal 3 220kV	Bay address:	LT CHANGOS J7

Device:

Name/description:	220 kV Diag. 3	Manufacturer:	ALSTOM (GE)
Device type:	P54681GC6M0760M	Device address:	
Serial/model number:	630638V		
Additional info 1:	Sfw Ref: P546____6A_760_D		
Additional info 2:			

Nominal Values:

f nom:	50,00 Hz	Number of phases:	3
V nom (secondary):	115,0 V	V primary:	230,0 kV
I nom (secondary):	1,000 A	I primary:	4,000 kA

Residual Voltage/Current Factors:

VLN / VN:	1,732	IN / I nom:	1,000

Limits:

V max:	300,0 V	I max:	50,00 A

Debounce/Deglitch Filters:

Debounce time:	3,000 ms	Deglitch time:	0,000 s

Overload Detection:

Suppression time:	50,00 ms

Test Object - Other RIO Functions

CB Configuration

Description	Name	Value
CB trip time	CB trip time	50,00 ms
CB close time	CB close time	100,00 ms
Times for 52a, 52b in percent of CB time	52a, 52b % of CB	20,00 %

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	18-mar.-2019 11:38:57	Test End:	18-mar.-2019 11:39:01
User Name:		Manager:	
Company:			

Test Results

Title: inyección desbalanceada

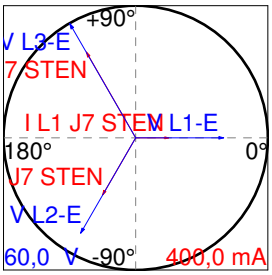
Fault Calculator:

Table Inputmode	Parameters (All values are secondary)

Direct	V L1-E	40,00 V	0,00 °	50,000 Hz
	V L2-E	50,00 V	-120,00 °	50,000 Hz
	V L3-E	60,00 V	120,00 °	50,000 Hz
	I L1 J7 STEN	100,0 mA	0,00 °	50,000 Hz
	I L2 J7 STEN	200,0 mA	-120,00 °	50,000 Hz
	I L3 J7 STEN	300,0 mA	120,00 °	50,000 Hz

Generator Settings

V L1-E	40,000V	0,00°
V L2-E	50,000V	-120,00°
V L3-E	60,000V	120,00°
I L1 J7 STEN	0,100A	0,00°
I L2 J7 STEN	0,200A	-120,00°
I L3 J7 STEN	0,300A	120,00°



Binary Outputs

Name	State
Sal. bin 1	0
Sal. bin 2	0

Binary Inputs

Name	Slope	Time
Trip FA J7 D1	0	
Trip FB J7 D1	0	
Trip FC J7 D1	0	
Trip FA J8 D1	0	
Trip FB J8 D1	0	
Trip FC J8 D1	0	
Trip FA J7 D2	0	
Trip FC J7 D2	0	
Trip FA J8 D2	0	
Trip FC J8 D2	0	
Overload	0	

Analog Inputs

VDCin	IDCin
-0,0001V	0,0001mA

Comment

CORRECTA

Synchronized mode (Synchronization to external signal failed)

Assessment

Passed 18-mar.-2019 11:37:33

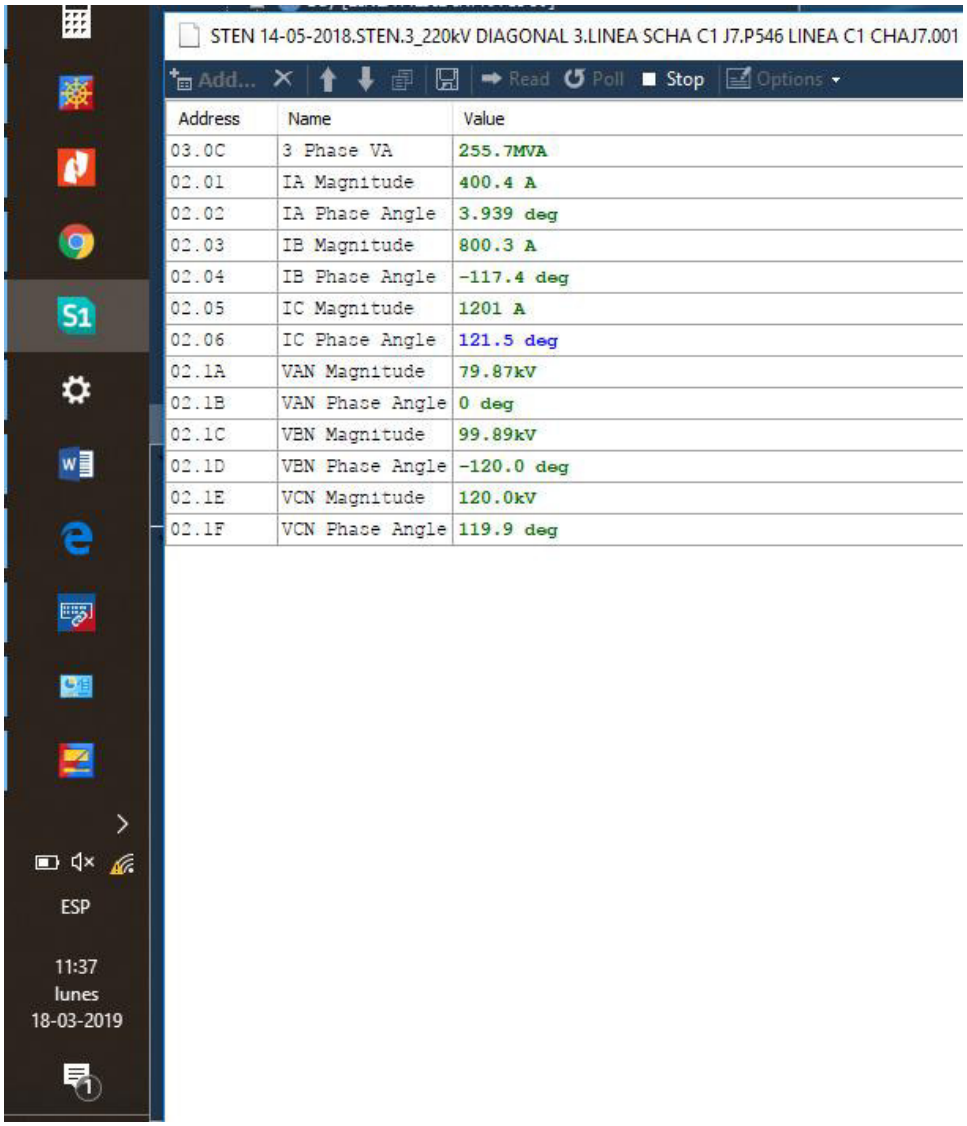
Comment

Summary

1 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

MEDIDAS DE LA PROTECCIÓN INYECCIÓN DESBALANCEADA



Address	Name	Value
03.0C	3 Phase VA	255.7MVA
02.01	IA Magnitude	400.4 A
02.02	IA Phase Angle	3.939 deg
02.03	IB Magnitude	800.3 A
02.04	IB Phase Angle	-117.4 deg
02.05	IC Magnitude	1201 A
02.06	IC Phase Angle	121.5 deg
02.1A	VAN Magnitude	79.87kV
02.1B	VAN Phase Angle	0 deg
02.1C	VBN Magnitude	99.89kV
02.1D	VBN Phase Angle	-120.0 deg
02.1E	VCN Magnitude	120.0kV
02.1F	VCN Phase Angle	119.9 deg

2.3 - PRUEBA DE CONTATOS DE TRIP:

Test Settings

State	PRE FALLA	FALL	POST FALLA
V L1-E	66,40 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	66,40 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	66,40 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	1,000 A 0,00 ° 50,000 Hz	1,500 A 0,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	1,000 A -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	1,000 A 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
I(2)-1	1,000 A 180,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I(2)-2	1,000 A 60,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I(2)-3	1,000 A -60,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz

Test Module

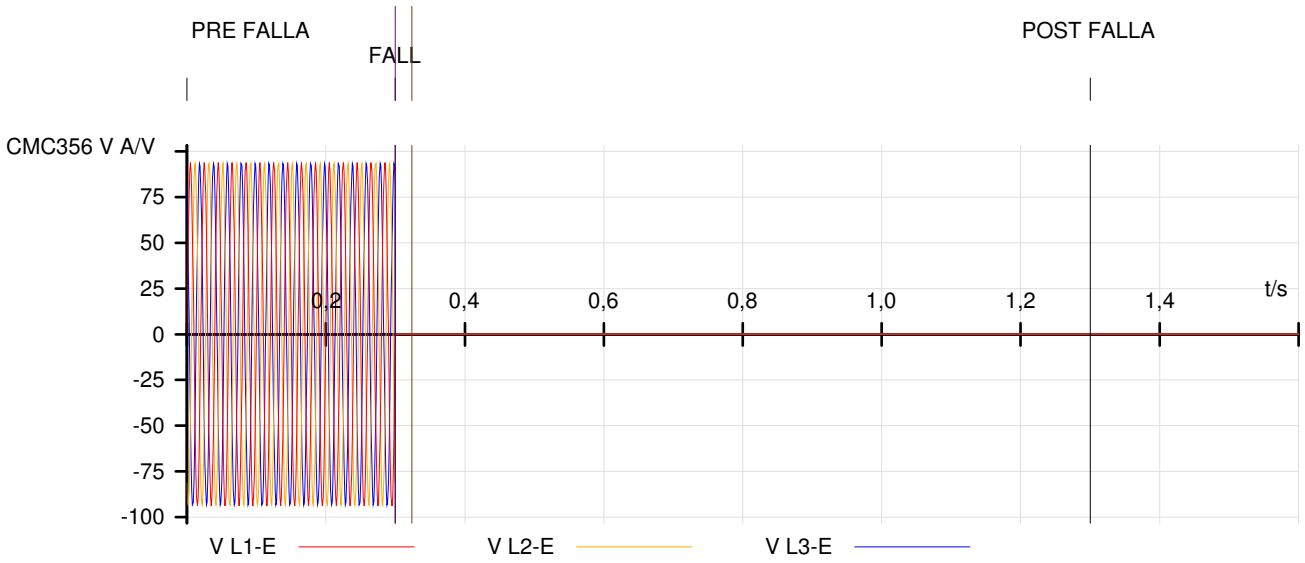
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	18-mar.-2019 12:53:49	Test End:	18-mar.-2019 12:53:53
User Name:		Manager:	
Company:			

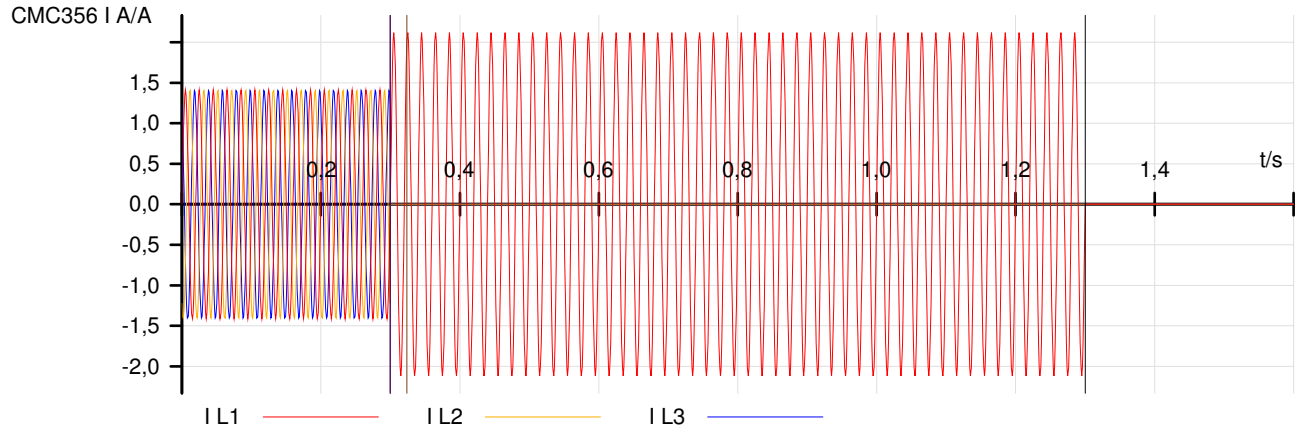
Test Results

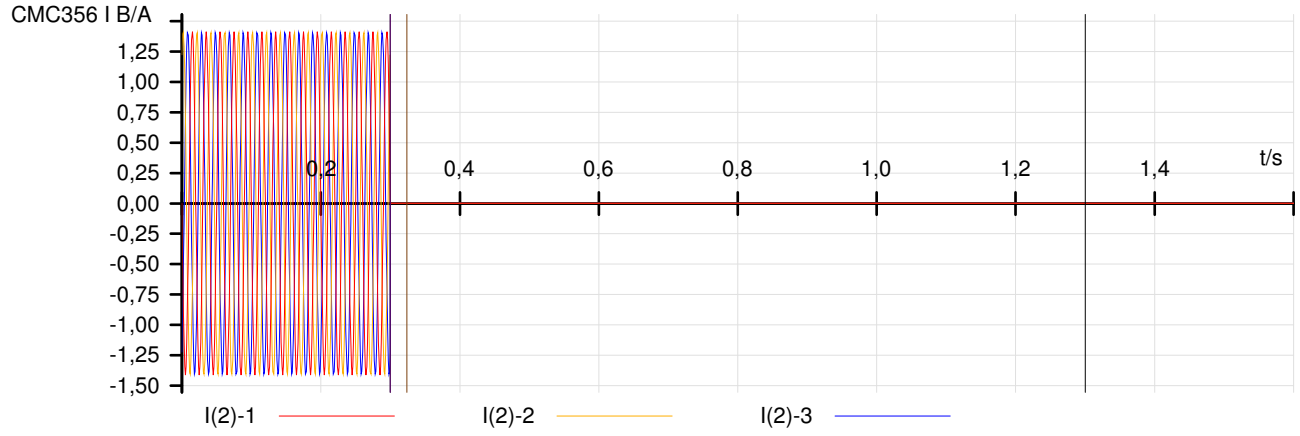
Time Assessment

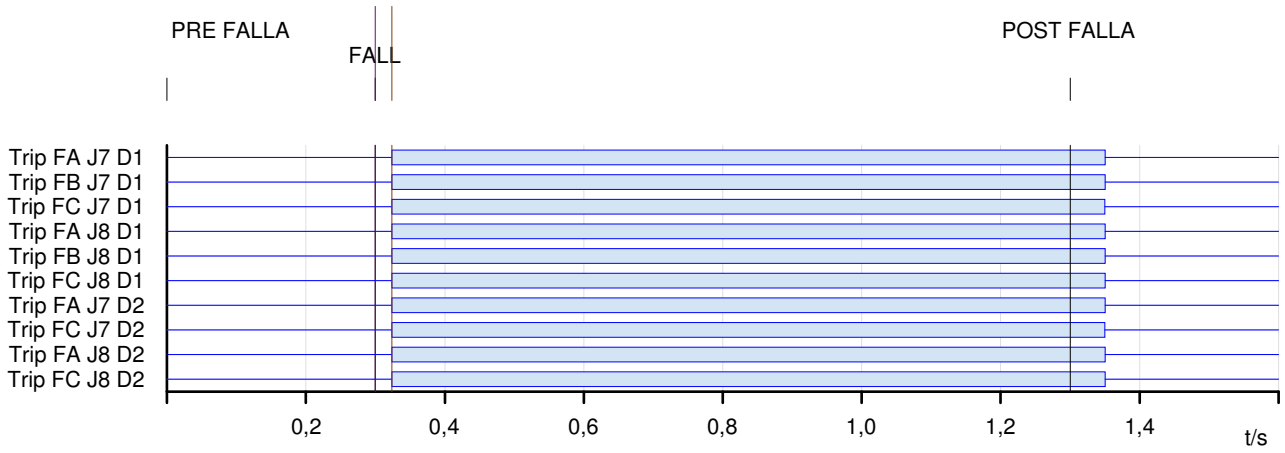
Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
									o

Assess: + .. Passed x .. Failed o .. Not assessed


PRE FALLA
FALL
POST FALLA
CMC356 V A/V
75
50
25
0
-25
-50
-75
-100
0,2
0,4
0,6
0,8
1,0
1,2
1,4
t/s
V L1-E
V L2-E
V L3-E


CMC356 I A/A
1,5
1,0
0,5
0,0
-0,5
-1,0
-1,5
-2,0
0,2
0,4
0,6
0,8
1,0
1,2
1,4
t/s
I L1
I L2
I L3


CMC356 I B/A
1,25
1,00
0,75
0,50
0,25
0,00
-0,25
-0,50
-0,75
-1,00
-1,25
-1,50
0,2
0,4
0,6
0,8
1,0
1,2
1,4
t/s
I(2)-1
I(2)-2
I(2)-3



Test State:
Test passed

Group end:2. Analogics channels tests

Group:3. 87L - Differential Protection

Hardware Configuration

Test Equipment

Type	Serial Number
CMC356	LC604U

Hardware Check

Performed At	Result	Details
18-03-2019 12:11:57	Passed	

Analog Outputs

Test Equipment		Test Object		
Device	**Connector**	**Display Name**	**Connection Terminal**	
CMC356 V A LC604U	1 2 3 N	V L1-E V L2-E V L3-E		
CMC356 V B LC604U	1 N			
CMC356 I A LC604U	1 2 3 N	I L1 I L2 I L3	FA J7 STEN FB J7 STEN FC J7STEN	
CMC356 I B LC604U	1 2 3 N	I(2)-1 I(2)-2 I(2)-3	FA J1SCHA FB J1SCHA FC J1SCHA	

Binary/Analog Inputs

Test Equipment		Test Object		
Device	**Connector**	**Display Name**	**Connection Terminal**	
CMC356 LC604U	1+	Bin. in 1	TRIP FA J7 D1	
	1-			
	2+	Bin. in 2	TRIP FB J7 D1	
	2-			
	3+	Bin. in 3	TRIP FC J7 D1	
	3-			
	4+	Bin. in 4	TRIP FA J8 D1	
	4-			
	5+	Bin. in 5	TRIP FB J8 D1	
	5-			
	6+	Bin. in 6	TRIP FC J8 D1	
	6-			
	7+	Bin. in 7	TRIP FA J7 D2	
	7-			
	8+	Bin. in 8	TRIP FC J7 D2	
	8-			
	9+	Bin. in 9	TRIP FA J8 D2	
	9-			
	10+	Bin. in 10	TRIP FC J8 D2	
	10-			
	1	Bin. in 11		
	2	Bin. in 12		
	N			

INYECCIÓN LOCAL REMOTA :

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	18-mar.-2019 12:12:03	Test End:	18-mar.-2019 12:12:06
User Name:		Manager:	
Company:			

Test Results

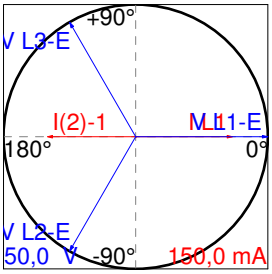
Title: PRUEBA DE INYECCIÓN LOCAL Y REMOTA

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	V L1-E	50,00 V	0,00 °	50,000 Hz
	V L2-E	50,00 V	-120,00 °	50,000 Hz
	V L3-E	50,00 V	120,00 °	50,000 Hz
	I L1	110,0 mA	0,00 °	50,000 Hz
	I L2	0,000 A	-120,00 °	50,000 Hz
	I L3	0,000 A	120,00 °	50,000 Hz

Generator Settings

V L1-E	50,000V	0,00°
V L2-E	50,000V	-120,00°
V L3-E	50,000V	120,00°
I L1	0,110A	0,00°
I L2	0,000A	-120,00°
I L3	0,000A	120,00°
I(2)-1	0,100A	180,00°
I(2)-2	0,000A	-120,00°
I(2)-3	0,000A	120,00°



Binary Inputs

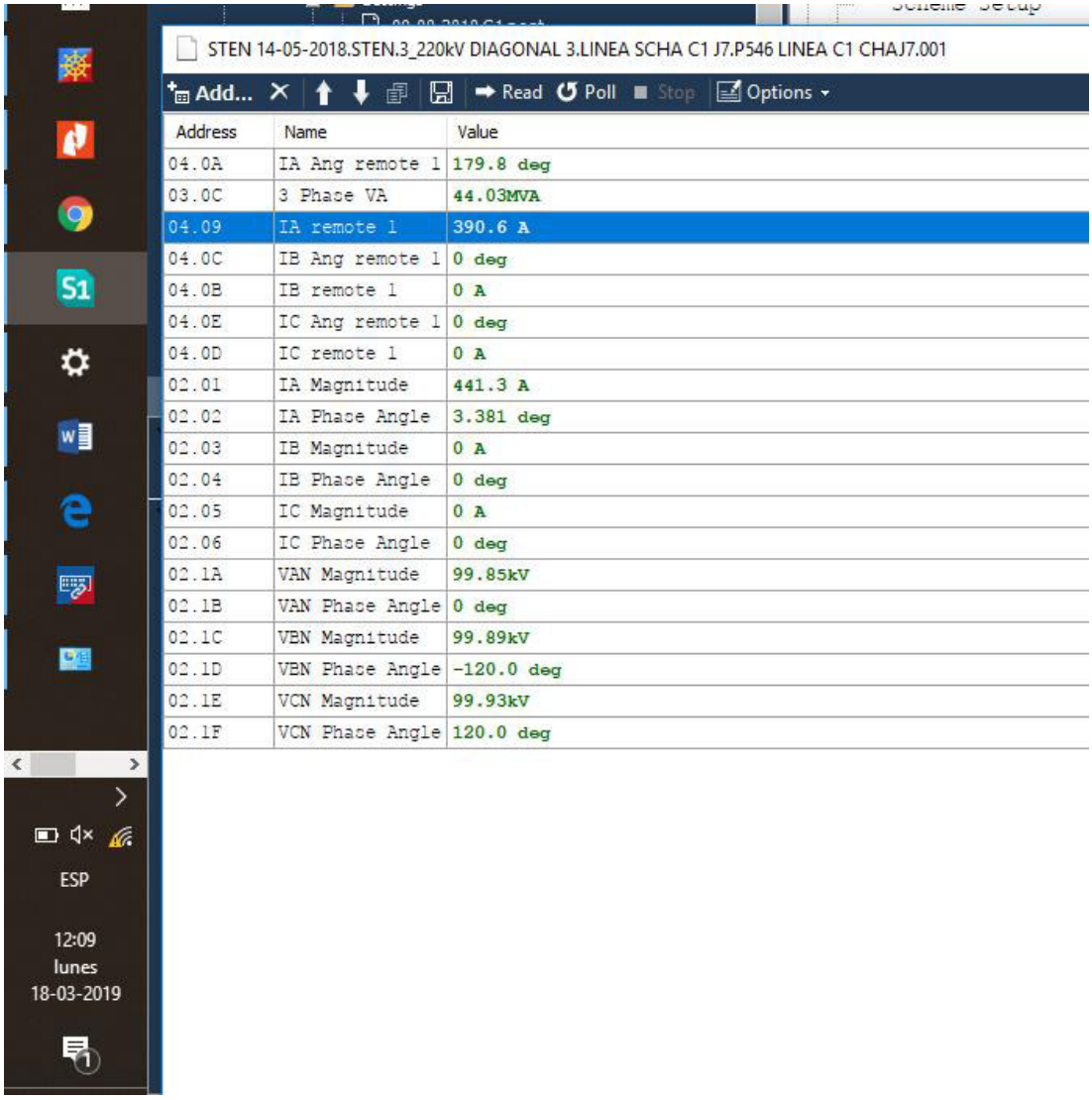
Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Bin. in 4	0	
Bin. in 5	0	
Bin. in 6	0	
Bin. in 7	0	
Bin. in 8	0	
Bin. in 9	0	
Bin. in 10	0	
Overload	0	

Summary

1 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

MEDIDAS DE LA PROTECCIÓN INYECCIÓN LOCAL REMOTA

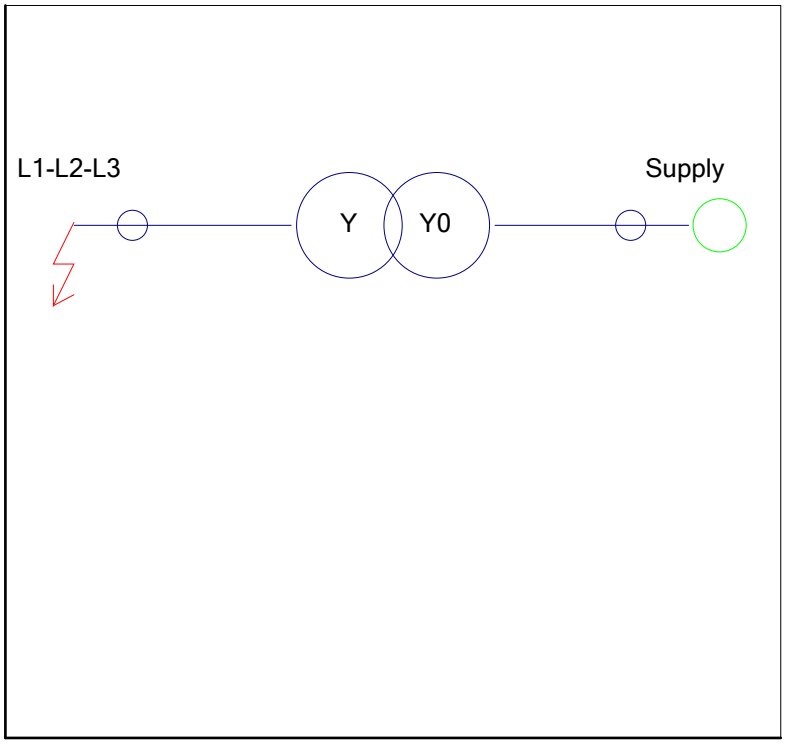


Address	Name	Value
04.0A	IA Ang remote 1	179.8 deg
03.0C	3 Phase VA	44.03MVA
04.09	IA remote 1	390.6 A
04.0C	IB Ang remote 1	0 deg
04.0B	IB remote 1	0 A
04.0E	IC Ang remote 1	0 deg
04.0D	IC remote 1	0 A
02.01	IA Magnitude	441.3 A
02.02	IA Phase Angle	3.381 deg
02.03	IB Magnitude	0 A
02.04	IB Phase Angle	0 deg
02.05	IC Magnitude	0 A
02.06	IC Phase Angle	0 deg
02.1A	VAN Magnitude	99.85kV
02.1B	VAN Phase Angle	0 deg
02.1C	VBN Magnitude	99.89kV
02.1D	VBN Phase Angle	-120.0 deg
02.1E	VCN Magnitude	99.93kV
02.1F	VCN Phase Angle	120.0 deg

ESTABILIDAD :

Graph:

Single Line View for Protected Object (YY0)



Time Trigger Settings

Start time:	Next full 1 min
Trigger period:	60 s
Start test accuracy:	-

Test Module

Name:	OMICRON Diff Configuration	Version:	3.20
Test Start:	18-mar.-2019 12:16:53	Test End:	18-mar.-2019 12:23:52
User Name:		Manager:	
Company:			

Test Settings:

Test time:	60 s	Apply Load Current:	No
Load Side:	n/a	Load Current:	0,00 In
Fault Side:	Primary	Supply Side:	Secondary
Vout enabled:	No	Vout winding:	Primary
Time-triggered:	No	Winding/leg output:	Primary

Test Results for Fault Type L1-L2-L3 at Fault Location Primary

ITest = 0,10 In **State: Tested** **Result: Passed**

Phase	Primary				Secondary				Tertiary			
	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle
L1	0,10A	-180,0°	0,000A	0,000°	0,10A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L2	0,10A	60,0°	0,000A	0,000°	0,10A	-120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L3	0,10A	-60,0°	0,000A	0,000°	0,10A	120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
E	0,00A	0,0°	0,000A	0,000°	0,00A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a

Phase	Imeas_diff	Imeas_bias

L1	0,000 In	0,000 In
L2	0,000 In	0,000 In
L3	0,000 In	0,000 In

ITest = 0,80 In **State: Tested** **Result: Passed**

Phase	Primary				Secondary				Tertiary			
	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle
L1	0,80A	-180,0°	0,000A	0,000°	0,80A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L2	0,80A	60,0°	0,000A	0,000°	0,80A	-120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L3	0,80A	-60,0°	0,000A	0,000°	0,80A	120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
E	0,00A	0,0°	0,000A	0,000°	0,00A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a

Phase	Imeas_diff	Imeas_bias
L1	0,000 In	0,000 In
L2	0,000 In	0,000 In
L3	0,000 In	0,000 In

ITest = 1,50 In **State: Tested** **Result: Passed**

Phase	Primary				Secondary				Tertiary			
	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle
L1	1,50A	-180,0°	0,000A	0,000°	1,50A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L2	1,50A	60,0°	0,000A	0,000°	1,50A	-120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L3	1,50A	-60,0°	0,000A	0,000°	1,50A	120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
E	0,00A	0,0°	0,000A	0,000°	0,00A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a

Phase	Imeas_diff	Imeas_bias
L1	0,000 In	0,000 In
L2	0,000 In	0,000 In
L3	0,000 In	0,000 In

ITest = 2,20 In **State: Tested** **Result: Passed**

Phase	Primary				Secondary				Tertiary			
	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle
L1	2,20A	-180,0°	0,000A	0,000°	2,20A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L2	2,20A	60,0°	0,000A	0,000°	2,20A	-120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L3	2,20A	-60,0°	0,000A	0,000°	2,20A	120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
E	0,00A	0,0°	0,000A	0,000°	0,00A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a

Phase	Imeas_diff	Imeas_bias
L1	0,000 In	0,000 In
L2	0,000 In	0,000 In
L3	0,000 In	0,000 In

ITest = 2,90 In **State: Tested** **Result: Passed**

Phase	Primary				Secondary				Tertiary			
	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle	Itest	Angle	Imeas	Angle
L1	2,90A	-180,0°	0,000A	0,000°	2,90A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L2	2,90A	60,0°	0,000A	0,000°	2,90A	-120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
L3	2,90A	-60,0°	0,000A	0,000°	2,90A	120,0°	0,000A	0,000°	n/a	n/a	n/a	n/a
E	0,00A	0,0°	0,000A	0,000°	0,00A	0,0°	0,000A	0,000°	n/a	n/a	n/a	n/a

Phase	Imeas_diff	Imeas_bias
L1	0,000 In	0,000 In
L2	0,000 In	0,000 In
L3	0,000 In	0,000 In

Test State:

Test passed

5 out of 5 points tested.
5 points passed.
0 points failed.

PICKUP:

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	18-mar.-2019 12:39:28	Test End:	18-mar.-2019 12:40:10
User Name:		Manager:	
Company:			

Test Results

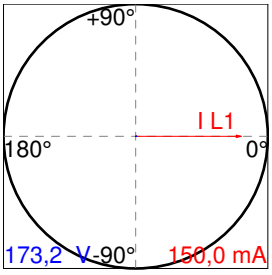
Title: PRUEBA DE BUSQUEDA DE PU

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	V L1-E	0,000 V	0,00 °	50,000 Hz
	V L2-E	0,000 V	-120,00 °	50,000 Hz
	V L3-E	0,000 V	120,00 °	50,000 Hz
	I L1	120,0 mA	0,00 °	50,000 Hz
	I L2	0,000 A	-120,00 °	50,000 Hz
	I L3	0,000 A	120,00 °	50,000 Hz

Generator Settings

V L1-E	0,000V	0,00°
V L2-E	0,000V	-120,00°
V L3-E	0,000V	120,00°
I L1	0,120A	0,00°
I L2	0,000A	-120,00°
I L3	0,000A	120,00°
I(2)-1	0,000A	180,00°
I(2)-2	0,000A	-120,00°
I(2)-3	0,000A	120,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	0->1	0,240s
Bin. in 2	0->1	0,240s
Bin. in 3	0->1	0,240s
Overload	1->0	n/a

Summary

1 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

DISPAROS:

Test Module

Name:	OMICRON Diff Operating Characteristic	Version:	3.20
Test Start:	18-mar.-2019 13:01:34	Test End:	18-mar.-2019 13:01:48
User Name:		Manager:	

Company:

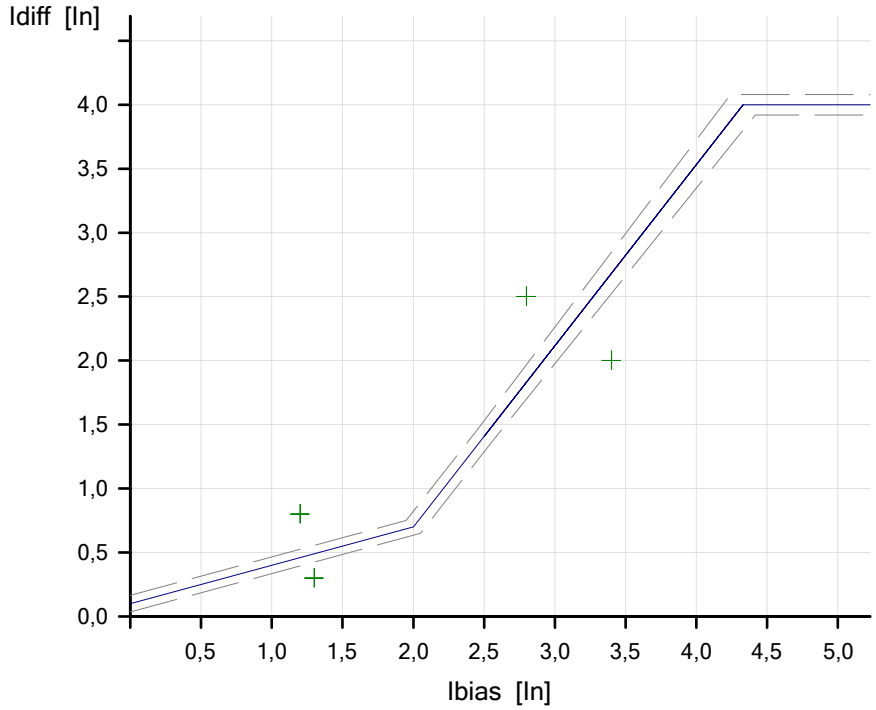
Test Settings:

Testing:	Primary / Secondary		
Max. Test Time:	1,50 s	Delay Time:	1,00 s
Prefault:	No		
Prefault current:	0,00 In	Prefault time:	0,000 s
Vout enabled:	No	Vout winding:	Primary
Time-triggered:	No	Winding/leg output:	Primary

Test Results for Fault Type L1-L2 at Reference Side Primary

Idiff	Ibias	Nominal Trip Time	Actual Trip Time	State	Result
0,30 In	1,30 In	N/T	N/T	Tested	Passed
0,80 In	1,20 In	0,0300 s	0,0582 s	Tested	Passed
2,00 In	3,40 In	N/T	N/T	Tested	Passed
2,50 In	2,80 In	0,0300 s	0,0680 s	Tested	Passed

Operating Characteristic Diagram



Shot	1	2	3	4
Idiff:	0,30 In	0,80 In	2,00 In	2,50 In
Ibias:	1,30 In	1,20 In	3,40 In	2,80 In
I Primary L1:	1,450 A	1,600 A	4,400 A	4,050 A
Phase Primary L1:	-180,000 °	-180,000 °	-180,000 °	-180,000 °
I Primary L2:	1,450 A	1,600 A	4,400 A	4,050 A
Phase Primary L2:	0,000 °	0,000 °	0,000 °	0,000 °
I Primary L3:	0,000 A	0,000 A	0,000 A	0,000 A
Phase Primary L3:	0,000 °	0,000 °	0,000 °	0,000 °
I Secondary L1:	1,150 A	0,800 A	2,400 A	1,550 A
Phase Secondary L1:	0,000 °	0,000 °	0,000 °	0,000 °
I Secondary L2:	1,150 A	0,800 A	2,400 A	1,550 A

Phase Secondary L2:	180,000 °	180,000 °	180,000 °	180,000 °
I Secondary L3:	0,000 A	0,000 A	0,000 A	0,000 A
Phase Secondary L3:	0,000 °	0,000 °	0,000 °	0,000 °
I Tertiary L1:				
Phase Tertiary L1:				
I Tertiary L2:				
Phase Tertiary L2:				
I Tertiary L3:				
Phase Tertiary L3:				
V L1:				
Phase L1:				
V L2:				
Phase L2:				
V L3:				
Phase L3:				

Test State:

Test passed

4 out of 4 points tested.
4 points passed.
0 points failed.

BUSQUEDA :

Test Module

Name:	OMICRON Diff Operating Characteristic	Version:	3.20
Test Start:	18-mar.-2019 13:06:10	Test End:	18-mar.-2019 13:06:45
User Name:		Manager:	
Company:			

Test Settings:

General Settings:

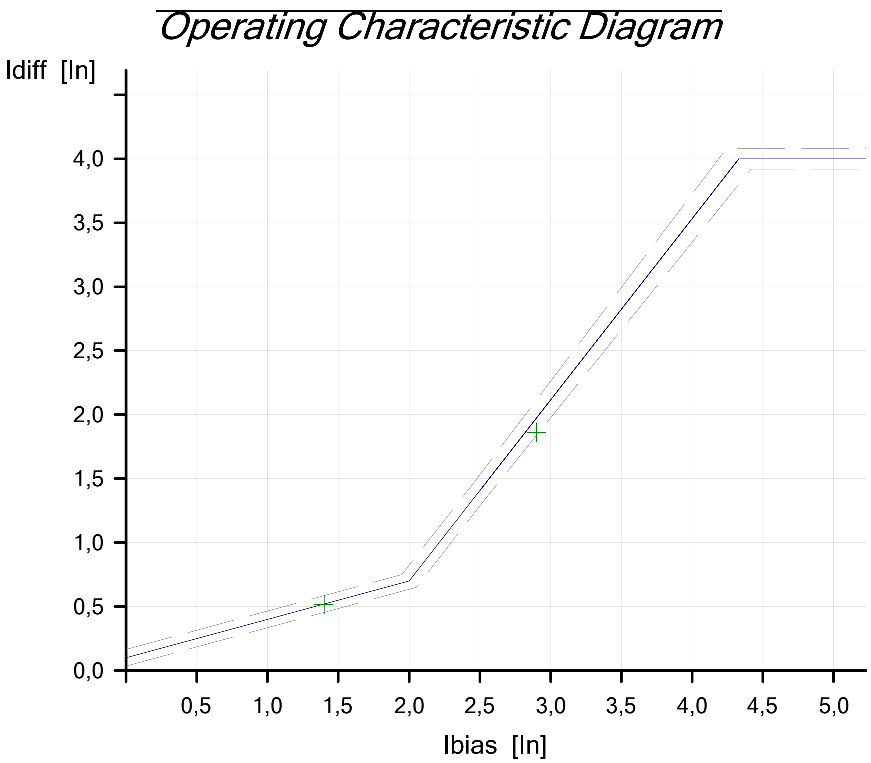
Testing:	Primary / Secondary		
Max. Test Time:	1,50 s	Delay Time:	1,00 s
Prefault:	No		
Prefault current:	0,00 In	Prefault time:	0,000 s
Vout enabled:	No	Vout winding:	Primary
Time-triggered:	No	Winding/leg output:	Primary

Search Test Settings:

Ignore Default Char.:	No		
Resolution Relative:	0,10 %	Resolution Absolute:	0,010 In

Test Results for Fault Location L1-L2 at Reference Side Primary

Ibias	Idiff Nominal	Idiff Actual	Dev (rel)	Dev (abs)	Check Test	State	Result
1,40 In	0,520 In	0,516 In	-0,78 %	-0,0041 In		Tested	Passed
2,90 In	1,975 In	1,860 In	-5,82 %	-0,1149 In		Tested	Passed



Test State:

Test passed

2 out of 2 points tested.

2 points passed.

0 points failed.

Group end:3. 87L - Differential Protection

Group:4. Sobrecorrientes

Group:4.1 - Fase

I>1:
Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,04 s	VT connection:	n/a
TimeTolRel:	5,00 %	CT starpoint connection:	n/a
CurrentTolAbs:	0,05 Iref		
CurrentTolRel:	5,00 %		
Directional:	No		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	I>1	IEC Definite Time	1,20 Iref	1,00 s	0,95	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	IN>1 67N	IEC Normal Inverse	0,10 Iref	0,17	0,95	Non Directional
No	IN>2	IEC Normal Inverse	0,20 Iref	0,30	0,95	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #7	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional
No	I #8	IEC Definite Time	2,00 Iref	1,00 s	0,95	Non Directional
No	I #9	IEC Definite Time	3,00 Iref	1,00 s	0,95	Non Directional

Elements - Zero Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #10	IEC Definite Time	0,33 Iref	1,00 s	0,95	Non Directional
No	I #11	IEC Definite Time	0,67 Iref	1,00 s	0,95	Non Directional
No	I #12	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	18-mar.-2019 14:35:29	Test End:	18-mar.-2019 14:36:16
User Name:		Manager:	
Company:			

Test Settings:

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	3,000 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	No
Fault voltage LN (for all but two phase faults):	n/a
Fault voltage LL (for two phase faults):	n/a
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-L2	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L2-L3	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L2-L3	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L2-L3	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L3-L1	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L3-L1	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L3-L1	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2-L3	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2-L3	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2-L3	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L1	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L1	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L1	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L2	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L2	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L2	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L3	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L3	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L3	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s

Binary Inputs:

Trigger Logic: And

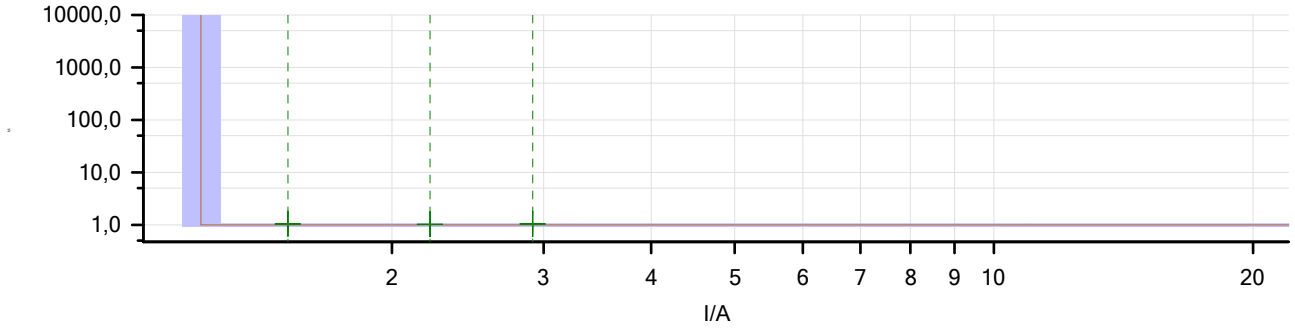
Name	Trigger State
Trip	1
Start	1
Bin. in 3	1
Bin. in 4	1
Bin. in 5	1
Bin. in 6	1
Bin. in 7	1
Bin. in 8	1
Bin. in 9	1
Bin. in 10	1

Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-L2	I>1	1,262	1,514 A	n/a	1,000 s	1,038 s	3,760 %	No	Passed
L1-L2	I>1	1,845	2,214 A	n/a	1,000 s	1,034 s	3,370 %	No	Passed
L1-L2	I>1	2,428	2,914 A	n/a	1,000 s	1,036 s	3,620 %	No	Passed
L2-L3	I>1	1,262	1,514 A	n/a	1,000 s	1,037 s	3,670 %	No	Passed
L2-L3	I>1	1,845	2,214 A	n/a	1,000 s	1,035 s	3,450 %	No	Passed
L2-L3	I>1	2,428	2,914 A	n/a	1,000 s	1,030 s	3,040 %	No	Passed
L3-L1	I>1	1,262	1,514 A	n/a	1,000 s	1,044 s	4,440 %	No	Passed
L3-L1	I>1	1,845	2,214 A	n/a	1,000 s	1,037 s	3,660 %	No	Passed
L3-L1	I>1	2,428	2,914 A	n/a	1,000 s	1,032 s	3,190 %	No	Passed
L1-L2-L3	I>1	1,262	1,514 A	n/a	1,000 s	1,044 s	4,410 %	No	Passed
L1-L2-L3	I>1	1,845	2,214 A	n/a	1,000 s	1,033 s	3,250 %	No	Passed
L1-L2-L3	I>1	2,428	2,914 A	n/a	1,000 s	1,032 s	3,230 %	No	Passed
L1	I>1	1,262	1,514 A	n/a	1,000 s	1,035 s	3,530 %	No	Passed
L1	I>1	1,845	2,214 A	n/a	1,000 s	1,040 s	3,960 %	No	Passed
L1	I>1	2,428	2,914 A	n/a	1,000 s	1,031 s	3,100 %	No	Passed
L2	I>1	1,262	1,514 A	n/a	1,000 s	1,037 s	3,700 %	No	Passed
L2	I>1	1,845	2,214 A	n/a	1,000 s	1,033 s	3,300 %	No	Passed
L2	I>1	2,428	2,914 A	n/a	1,000 s	1,034 s	3,390 %	No	Passed
L3	I>1	1,262	1,514 A	n/a	1,000 s	1,041 s	4,110 %	No	Passed
L3	I>1	1,845	2,214 A	n/a	1,000 s	1,041 s	4,070 %	No	Passed
L3	I>1	2,428	2,914 A	n/a	1,000 s	1,033 s	3,310 %	No	Passed

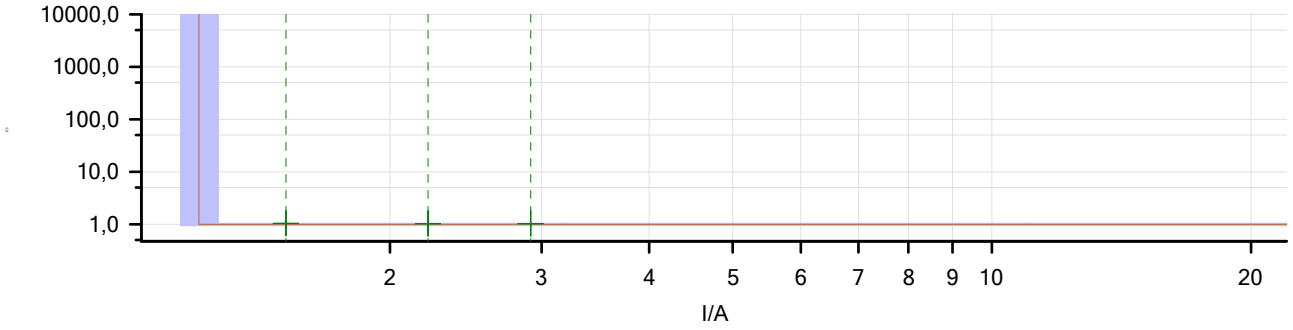
Charts for Fault Types:

Type	Angle
L1-L2	n/a



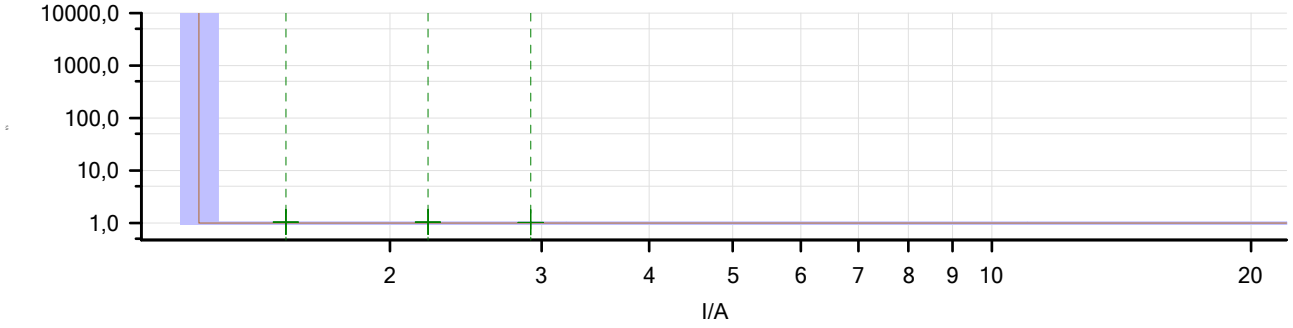
Charts for Fault Types:

Type	Angle
L2-L3	n/a



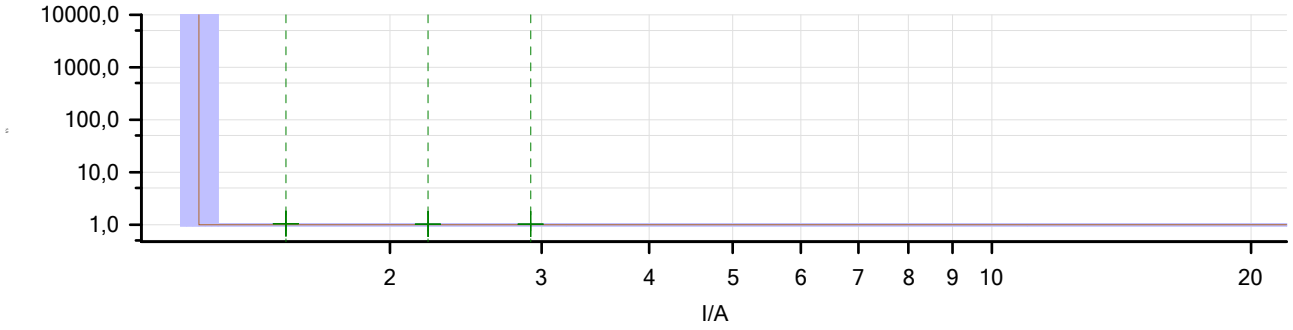
Charts for Fault Types:

Type	Angle
L3-L1	n/a



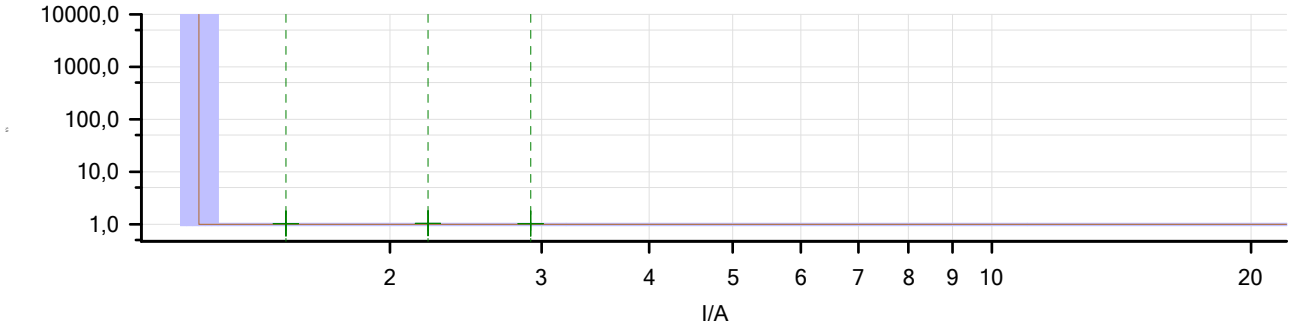
Charts for Fault Types:

Type	Angle
L1-L2-L3	n/a



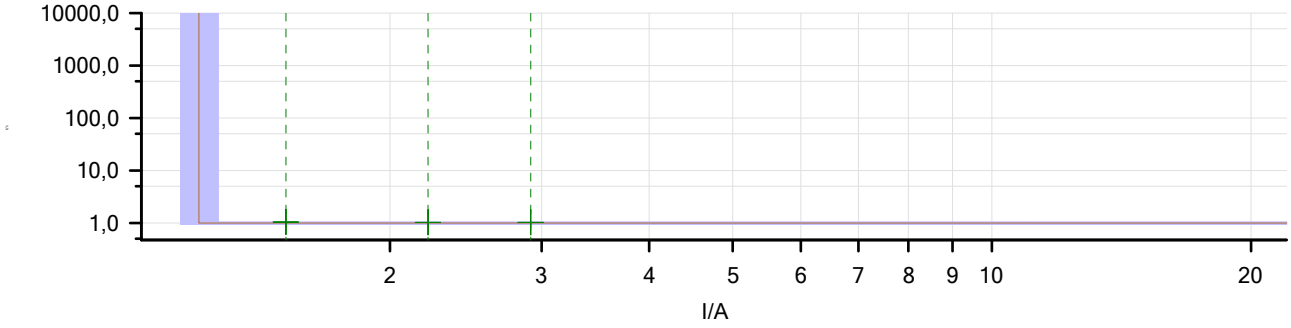
Charts for Fault Types:

Type	Angle
L1	n/a



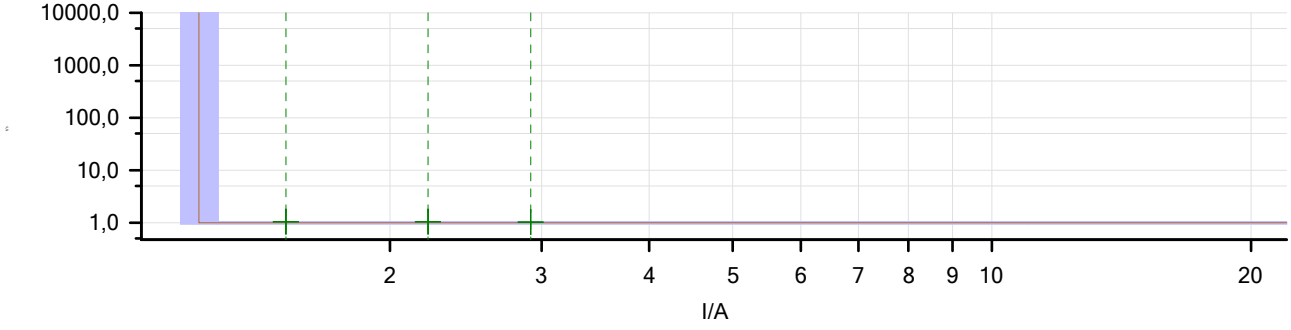
Charts for Fault Types:

Type	Angle
L2	n/a



Charts for Fault Types:

Type	Angle
L3	n/a



State:

21 out of 21 points tested.
21 points passed.
0 points failed.

General Assessment: Test passed!

I>1 BLOQUEO X EMERG.:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,04 s	VT connection:	n/a
TimeTolRel:	5,00 %	CT starpoint connection:	n/a
CurrentTolAbs:	0,05 Iref		
CurrentTolRel:	5,00 %		
Directional:	No		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	I>1	IEC Definite Time	1,20 Iref	1,00 s	0,95	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	IN>1 67N	IEC Normal Inverse	0,10 Iref	0,17	0,95	Non Directional
No	IN>2	IEC Normal Inverse	0,20 Iref	0,30	0,95	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #7	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional
No	I #8	IEC Definite Time	2,00 Iref	1,00 s	0,95	Non Directional
No	I #9	IEC Definite Time	3,00 Iref	1,00 s	0,95	Non Directional

Elements - Zero Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #10	IEC Definite Time	0,33 Iref	1,00 s	0,95	Non Directional
No	I #11	IEC Definite Time	0,67 Iref	1,00 s	0,95	Non Directional
No	I #12	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	18-mar.-2019 15:09:31	Test End:	18-mar.-2019 15:10:36
User Name:		Manager:	
Company:			

Test Settings:

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	3,000 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	No
Fault voltage LN (for all but two phase faults):	n/a
Fault voltage LL (for two phase faults):	n/a
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-L2	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L2-L3	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L2-L3	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L2-L3	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L3-L1	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L3-L1	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L3-L1	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2-L3	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2-L3	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L1-L2-L3	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L1	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L1	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L1	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L2	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L2	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L2	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s
L3	I>1	1,262	1,514 A	n/a	1,000 s	950,0 ms	1,050 s
L3	I>1	1,845	2,214 A	n/a	1,000 s	950,0 ms	1,050 s
L3	I>1	2,428	2,914 A	n/a	1,000 s	950,0 ms	1,050 s

Binary Inputs:

Trigger Logic: And

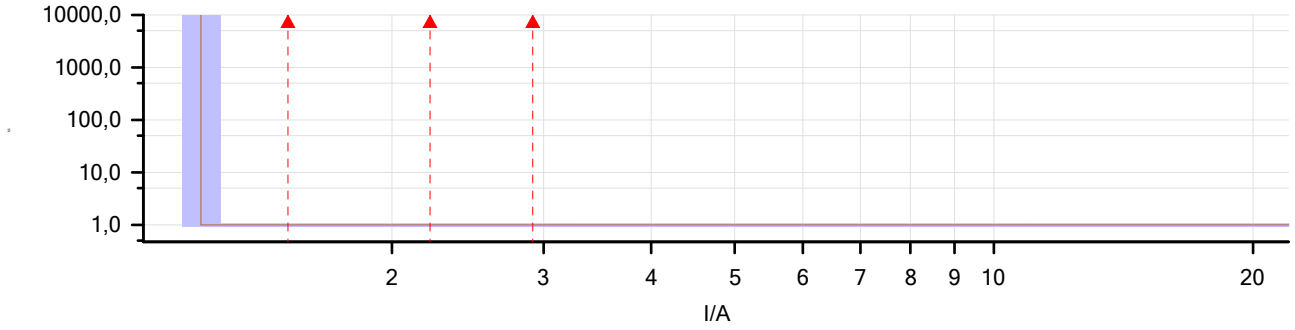
Name	Trigger State
Trip	1
Start	1
Bin. in 3	1
Bin. in 4	1
Bin. in 5	1
Bin. in 6	1
Bin. in 7	1
Bin. in 8	1
Bin. in 9	1
Bin. in 10	1

Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-L2	I>1	1,262	1,514 A	n/a	1,000 s	No trip	n/a	No	Failed
L1-L2	I>1	1,845	2,214 A	n/a	1,000 s	No trip	n/a	No	Failed
L1-L2	I>1	2,428	2,914 A	n/a	1,000 s	No trip	n/a	No	Failed
L2-L3	I>1	1,262	1,514 A	n/a	1,000 s	No trip	n/a	No	Failed
L2-L3	I>1	1,845	2,214 A	n/a	1,000 s	No trip	n/a	No	Failed
L2-L3	I>1	2,428	2,914 A	n/a	1,000 s	No trip	n/a	No	Failed
L3-L1	I>1	1,262	1,514 A	n/a	1,000 s	No trip	n/a	No	Failed
L3-L1	I>1	1,845	2,214 A	n/a	1,000 s	No trip	n/a	No	Failed
L3-L1	I>1	2,428	2,914 A	n/a	1,000 s	No trip	n/a	No	Failed
L1-L2-L3	I>1	1,262	1,514 A	n/a	1,000 s	No trip	n/a	No	Failed
L1-L2-L3	I>1	1,845	2,214 A	n/a	1,000 s	No trip	n/a	No	Failed
L1-L2-L3	I>1	2,428	2,914 A	n/a	1,000 s	No trip	n/a	No	Failed
L1	I>1	1,262	1,514 A	n/a	1,000 s	260,3 ms	-73,97 %	No	Failed
L1	I>1	1,845	2,214 A	n/a	1,000 s	258,7 ms	-74,13 %	No	Failed
L1	I>1	2,428	2,914 A	n/a	1,000 s	253,0 ms	-74,70 %	No	Failed
L2	I>1	1,262	1,514 A	n/a	1,000 s	257,7 ms	-74,23 %	No	Failed
L2	I>1	1,845	2,214 A	n/a	1,000 s	256,4 ms	-74,36 %	No	Failed
L2	I>1	2,428	2,914 A	n/a	1,000 s	254,2 ms	-74,58 %	No	Failed
L3	I>1	1,262	1,514 A	n/a	1,000 s	259,1 ms	-74,09 %	No	Failed
L3	I>1	1,845	2,214 A	n/a	1,000 s	256,1 ms	-74,39 %	No	Failed
L3	I>1	2,428	2,914 A	n/a	1,000 s	255,3 ms	-74,47 %	No	Failed

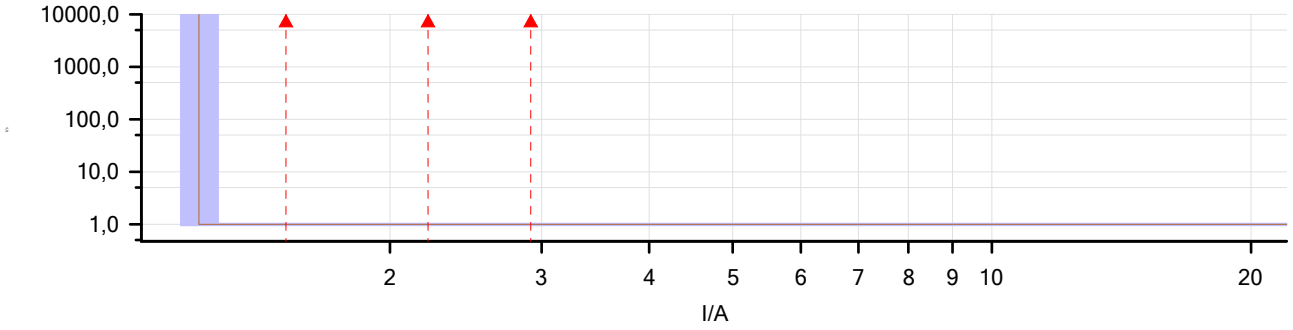
Charts for Fault Types:

Type	Angle
L1-L2	n/a



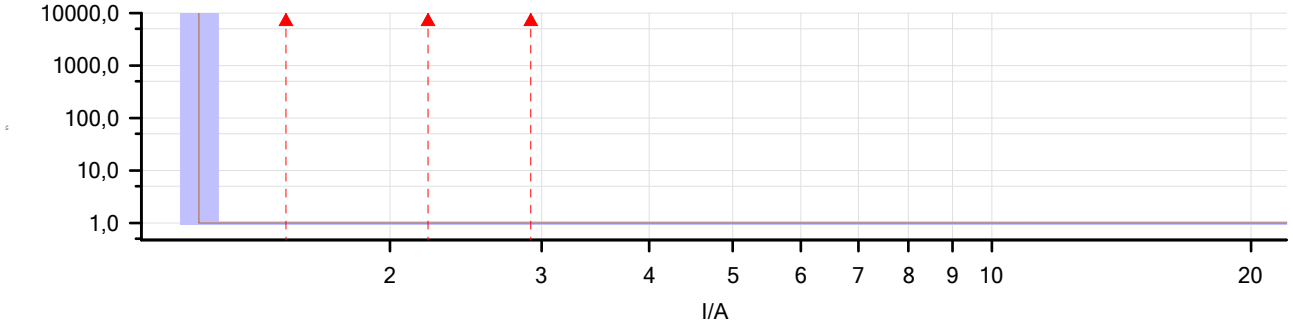
Charts for Fault Types:

Type	Angle
L2-L3	n/a



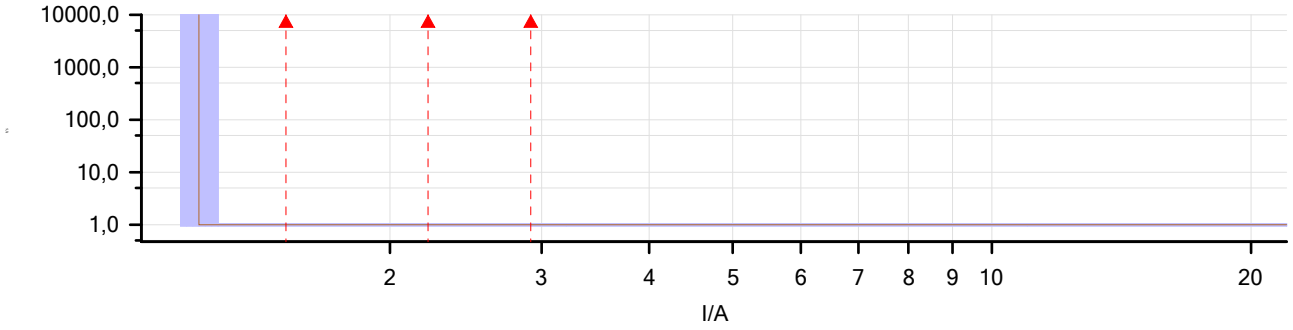
Charts for Fault Types:

Type	Angle
L3-L1	n/a



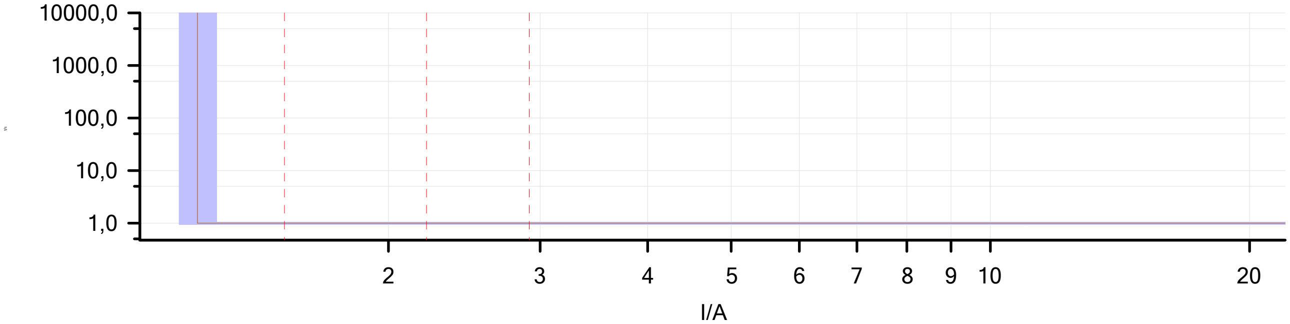
Charts for Fault Types:

Type	Angle
L1-L2-L3	n/a



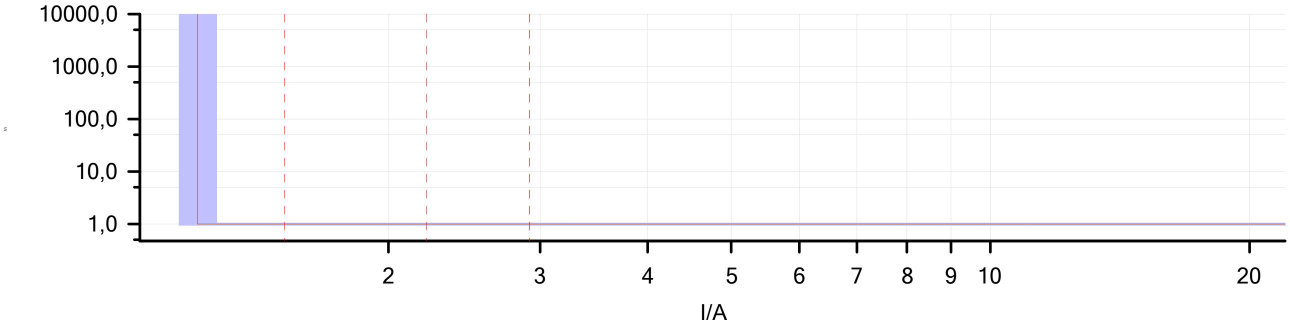
Charts for Fault Types:

Type	Angle
L1	n/a



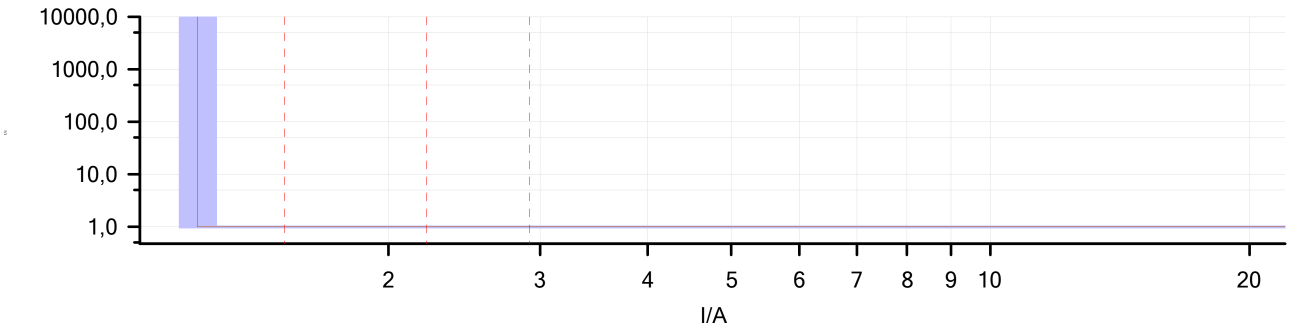
Charts for Fault Types:

Type	Angle
L2	n/a



Charts for Fault Types:

Type	Angle
L3	n/a



State:

21 out of 21 points tested.
0 points passed.
21 points failed.

General Assessment: Test passed! (manually assessed!)

Group end:4.1 - Fase

Group:4.2 - 76N y Neutro

IN>1 :
Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,04 s	VT connection:	At protected object
TimeTolRel:	5,00 %	CT starpoint connection:	To protected object
CurrentTolAbs:	0,05 Iref		
CurrentTolRel:	5,00 %		
Directional:	Yes		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I>1	IEC Definite Time	1,20 Iref	1,00 s	0,95	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	IN>1 67N	IEC Normal Inverse	0,10 Iref	0,17	0,95	Forward
No	IN>2	IEC Normal Inverse	0,20 Iref	0,30	0,95	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #7	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional
No	I #8	IEC Definite Time	2,00 Iref	1,00 s	0,95	Non Directional
No	I #9	IEC Definite Time	3,00 Iref	1,00 s	0,95	Non Directional

Elements - Zero Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #10	IEC Definite Time	0,33 Iref	1,00 s	0,95	Non Directional
No	I #11	IEC Definite Time	0,67 Iref	1,00 s	0,95	Non Directional
No	I #12	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	18-mar.-2019 14:46:42	Test End:	18-mar.-2019 14:47:04
User Name:		Manager:	
Company:			

Test Settings:

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	20,00 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	Yes
Fault voltage LN (for all but two phase faults):	50,00 V
Fault voltage LL (for two phase faults):	51,96 V
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	IN>1 67N	2,217	221,7 m A	-60,00 °	1,483 s	1,120 s	2,299 s
L1-E	IN>1 67N	4,217	421,7 m A	-60,00 °	815,1 ms	715,3 ms	939,3 ms
L1-E	IN>1 67N	6,217	621,7 m A	-60,00 °	639,4 ms	573,0 ms	710,7 ms
L2-E	IN>1 67N	2,217	221,7 m A	-60,00 °	1,483 s	1,120 s	2,299 s
L2-E	IN>1 67N	4,217	421,7 m A	-60,00 °	815,1 ms	715,3 ms	939,3 ms
L2-E	IN>1 67N	6,217	621,7 m A	-60,00 °	639,4 ms	573,0 ms	710,7 ms
L3-E	IN>1 67N	2,217	221,7 m A	-60,00 °	1,483 s	1,120 s	2,299 s
L3-E	IN>1 67N	4,217	421,7 m A	-60,00 °	815,1 ms	715,3 ms	939,3 ms
L3-E	IN>1 67N	6,217	621,7 m A	-60,00 °	639,4 ms	573,0 ms	710,7 ms

Binary Outputs:

Name	State
Sal. bin 1	0
Sal. bin 2	0

Binary Inputs:

Trigger Logic: Or

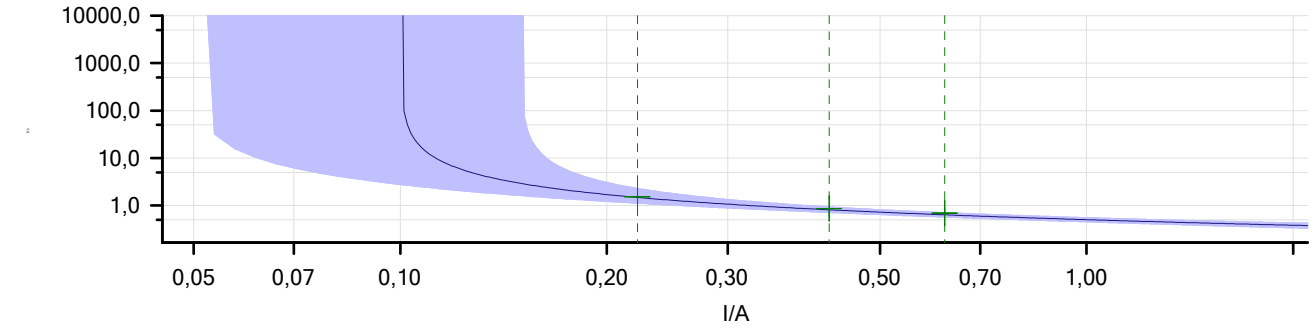
Name	Trigger State
Trip	1
Start	1
Bin. in 3	1
Bin. in 4	1
Bin. in 5	1
Bin. in 6	1
Bin. in 7	1
Bin. in 8	1
Bin. in 9	1
Bin. in 10	1

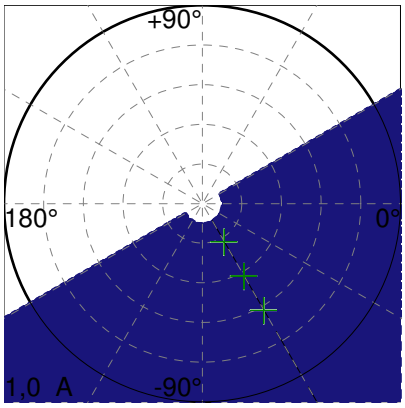
Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	IN>1 67N	2,217	221,7 m A	-60,00 °	1,483 s	1,532 s	3,310 %	No	Passed
L1-E	IN>1 67N	4,217	421,7 m A	-60,00 °	815,1 ms	858,9 ms	5,380 %	No	Passed
L1-E	IN>1 67N	6,217	621,7 m A	-60,00 °	639,4 ms	690,2 ms	7,943 %	No	Passed
L2-E	IN>1 67N	2,217	221,7 m A	-60,00 °	1,483 s	1,527 s	2,993 %	No	Passed
L2-E	IN>1 67N	4,217	421,7 m A	-60,00 °	815,1 ms	855,3 ms	4,938 %	No	Passed
L2-E	IN>1 67N	6,217	621,7 m A	-60,00 °	639,4 ms	683,8 ms	6,942 %	No	Passed
L3-E	IN>1 67N	2,217	221,7 m A	-60,00 °	1,483 s	1,542 s	3,977 %	No	Passed
L3-E	IN>1 67N	4,217	421,7 m A	-60,00 °	815,1 ms	853,0 ms	4,656 %	No	Passed
L3-E	IN>1 67N	6,217	621,7 m A	-60,00 °	639,4 ms	679,7 ms	6,301 %	No	Passed

Charts for Fault Types:

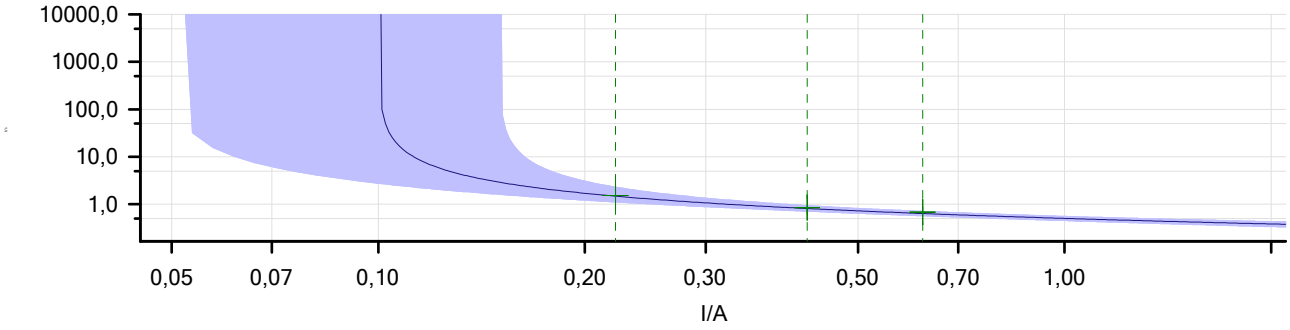
Type	Angle
L1-E	-60,00 °

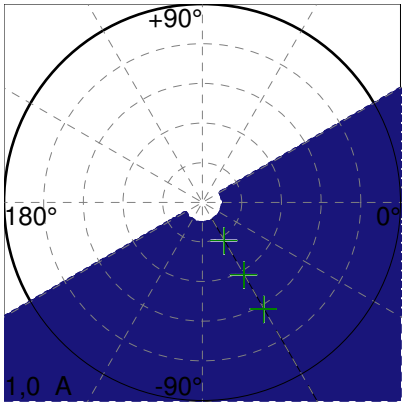




Charts for Fault Types:

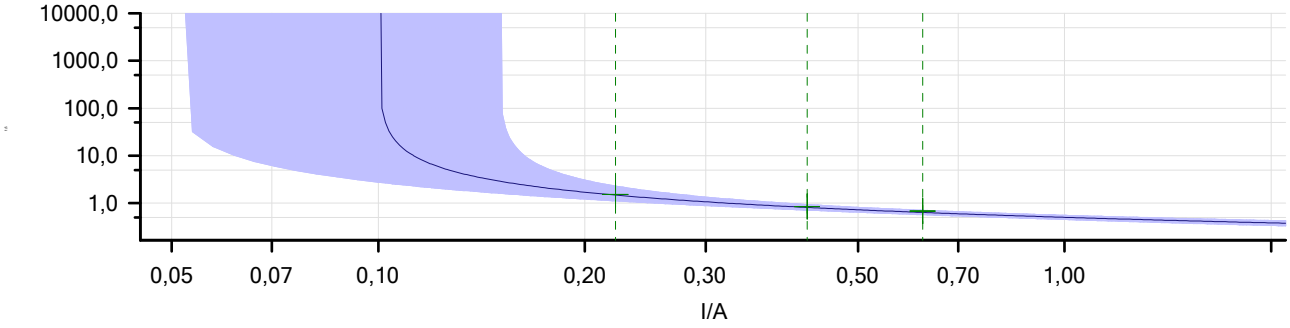
Type	Angle
L2-E	-60,00 °

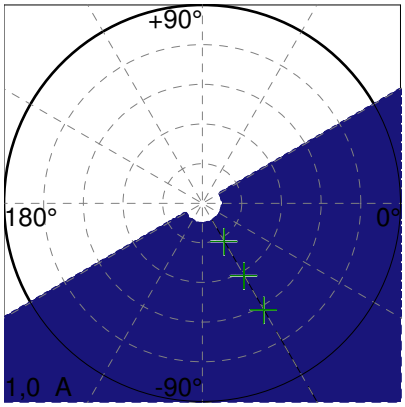




Charts for Fault Types:

Type	Angle
L3-E	-60,00 °





State:

9 out of 9 points tested.
9 points passed.
0 points failed.

General Assessment: Test passed!

IN>1 MAGNITUD BLOQUEO X EMERG.:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,04 s	VT connection:	At protected object
TimeTolRel:	5,00 %	CT starpoint connection:	To protected object
CurrentTolAbs:	0,05 Iref		
CurrentTolRel:	5,00 %		
Directional:	Yes		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I>1	IEC Definite Time	1,20 Iref	1,00 s	0,95	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	IN>1 67N	IEC Normal Inverse	0,10 Iref	0,17	0,95	Forward
No	IN>2	IEC Normal Inverse	0,20 Iref	0,30	0,95	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #7	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional
No	I #8	IEC Definite Time	2,00 Iref	1,00 s	0,95	Non Directional
No	I #9	IEC Definite Time	3,00 Iref	1,00 s	0,95	Non Directional

Elements - Zero Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #10	IEC Definite Time	0,33 Iref	1,00 s	0,95	Non Directional
No	I #11	IEC Definite Time	0,67 Iref	1,00 s	0,95	Non Directional
No	I #12	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	18-mar.-2019 15:23:37	Test End:	18-mar.-2019 15:23:49
User Name:		Manager:	
Company:			

Test Settings:

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	20,00 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	Yes
Fault voltage LN (for all but two phase faults):	50,00 V
Fault voltage LL (for two phase faults):	51,96 V
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	IN>1 67N	2,611	261,1 m A	-60,00 °	1,228 s	984,9 ms	1,660 s
L1-E	IN>1 67N	2,611	261,1 m A	-60,00 °	1,228 s	984,9 ms	1,660 s

Binary Outputs:

Name	State
Sal. bin 1	0
Sal. bin 2	0

Binary Inputs:

Trigger Logic: Or

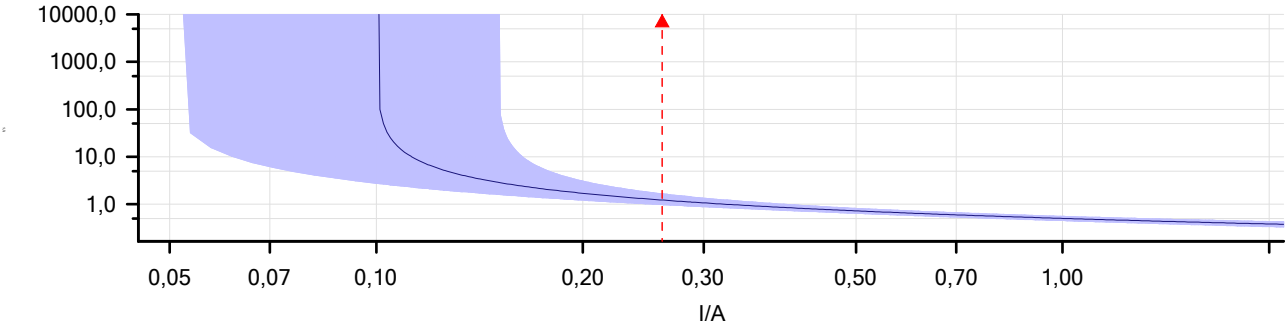
Name	Trigger State
Trip	1
Start	1
Bin. in 3	1
Bin. in 4	1
Bin. in 5	1
Bin. in 6	1
Bin. in 7	1
Bin. in 8	1
Bin. in 9	1
Bin. in 10	1

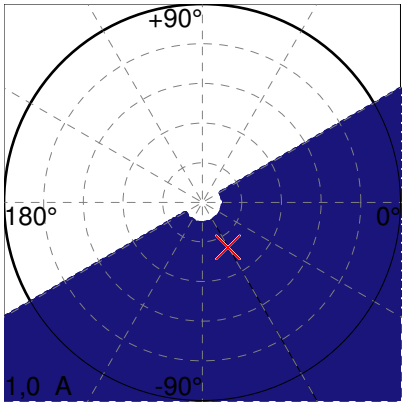
Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	IN>1 67N	2,611	261,1 m A	-60,00 °	1,228 s	No trip	n/a	No	Failed
L1-E	IN>1 67N	2,611	261,1 m A	-60,00 °	1,228 s	No trip	n/a	No	Failed

Charts for Fault Types:

Type	Angle
L1-E	-60,00 °





State:

2 out of 2 points tested.
0 points passed.
2 points failed.

General Assessment: Test passed! (manually assessed!)

IN > 1 Á N G U L O :

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,04 s	VT connection:	At protected object
TimeTolRel:	5,00 %	CT starpoint connection:	To protected object
CurrentTolAbs:	0,05 Iref		
CurrentTolRel:	5,00 %		
Directional:	Yes		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I>1	IEC Definite Time	1,20 Iref	1,00 s	0,95	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	IN>1 67N	IEC Normal Inverse	0,10 Iref	0,17	0,95	Forward
No	IN>2	IEC Normal Inverse	0,20 Iref	0,30	0,95	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #7	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional
No	I #8	IEC Definite Time	2,00 Iref	1,00 s	0,95	Non Directional
No	I #9	IEC Definite Time	3,00 Iref	1,00 s	0,95	Non Directional

Elements - Zero Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #10	IEC Definite Time	0,33 Iref	1,00 s	0,95	Non Directional
No	I #11	IEC Definite Time	0,67 Iref	1,00 s	0,95	Non Directional
No	I #12	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	18-mar.-2019 14:53:23	Test End:	18-mar.-2019 14:54:38
User Name:		Manager:	
Company:			

T e s t S e t t i n g s :

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	20,00 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	Yes
Fault voltage LN (for all but two phase faults):	50,00 V
Fault voltage LL (for two phase faults):	51,96 V
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	IN>1 67N	2,217	221,7 m A	10,00 °	1,483 s	1,120 s	2,299 s
L1-E	IN>1 67N	2,217	221,7 m A	40,00 °	No trip	No trip	No trip
L2-E	IN>1 67N	2,217	221,7 m A	10,00 °	1,483 s	1,120 s	2,299 s
L2-E	IN>1 67N	2,217	221,7 m A	40,00 °	No trip	No trip	No trip
L3-E	IN>1 67N	2,217	221,7 m A	10,00 °	1,483 s	1,120 s	2,299 s
L3-E	IN>1 67N	2,217	221,7 m A	40,00 °	No trip	No trip	No trip

Binary Outputs:

Name	State
Sal. bin 1	0
Sal. bin 2	0

Binary Inputs:

Trigger Logic: Or

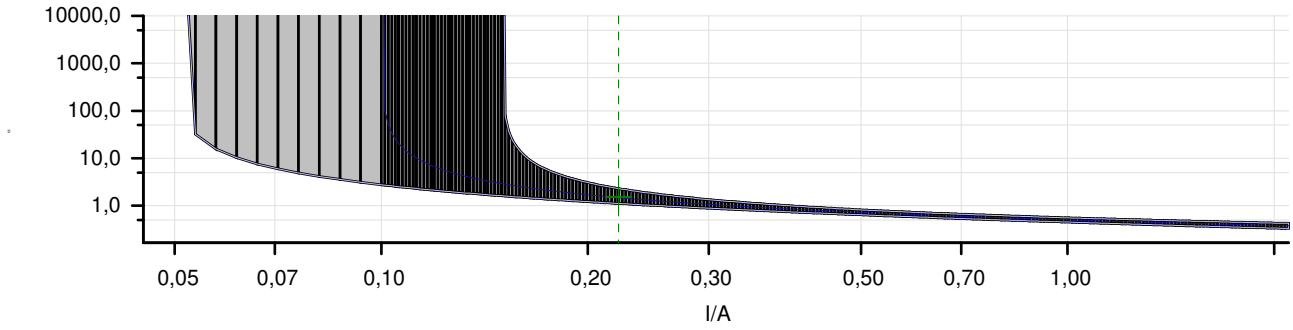
Name	Trigger State
Trip	1
Start	1
Bin. in 3	1
Bin. in 4	1
Bin. in 5	1
Bin. in 6	1
Bin. in 7	1
Bin. in 8	1
Bin. in 9	1
Bin. in 10	1

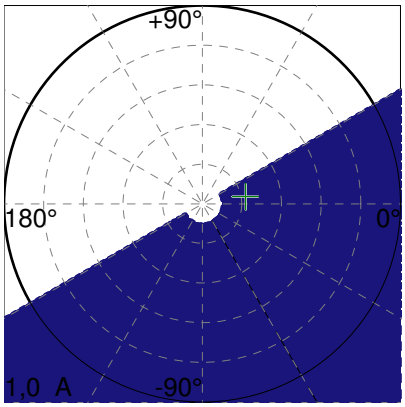
Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	IN>1 67N	2,217	221,7 m A	10,00 °	1,483 s	1,535 s	3,499 %	No	Passed
L1-E	IN>1 67N	2,217	221,7 m A	40,00 °	No trip	No trip	n/a	No	Passed
L2-E	IN>1 67N	2,217	221,7 m A	10,00 °	1,483 s	1,541 s	3,944 %	No	Passed
L2-E	IN>1 67N	2,217	221,7 m A	40,00 °	No trip	No trip	n/a	No	Passed
L3-E	IN>1 67N	2,217	221,7 m A	10,00 °	1,483 s	1,548 s	4,416 %	No	Passed
L3-E	IN>1 67N	2,217	221,7 m A	40,00 °	No trip	No trip	n/a	No	Passed

Charts for Fault Types:

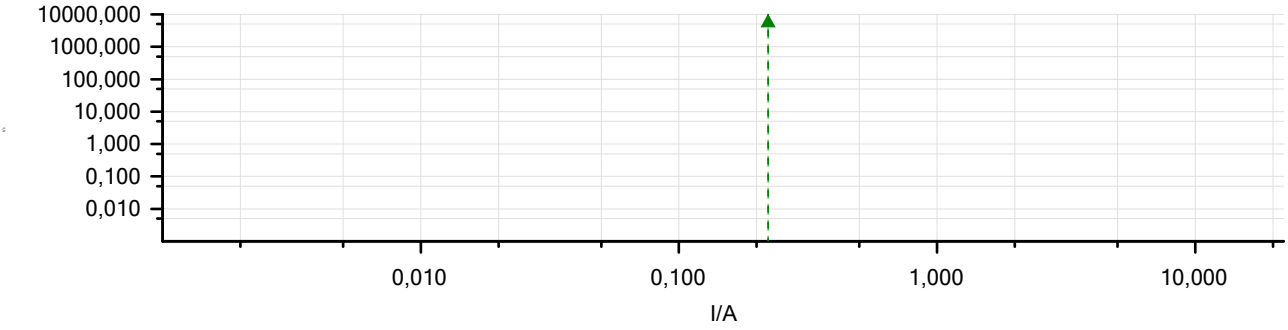
Type	Angle
L1-E	10,00 °

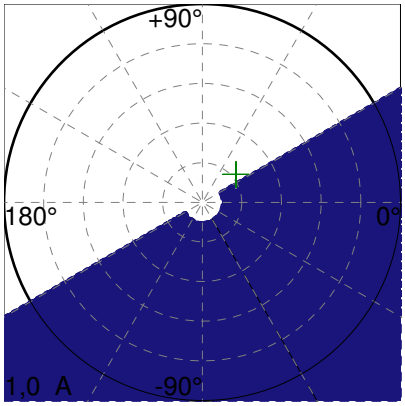




Charts for Fault Types:

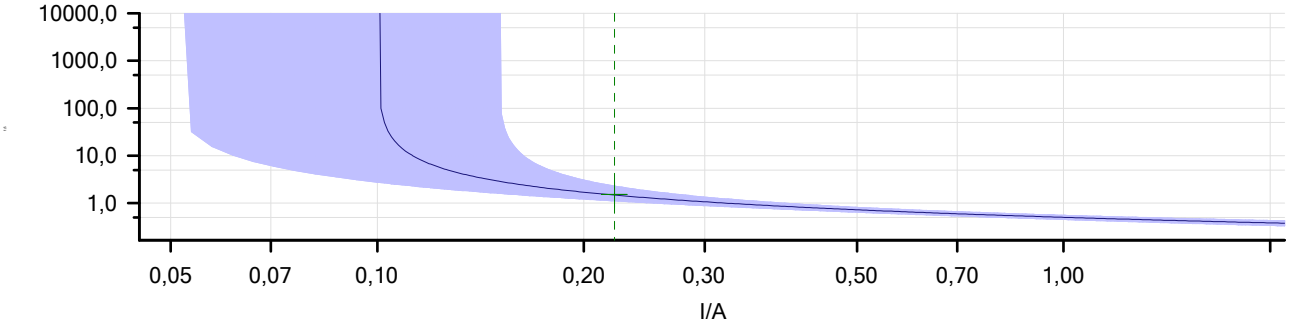
Type	Angle
L1-E	40,00 °

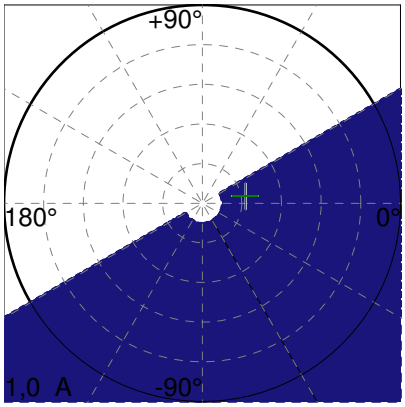




Charts for Fault Types:

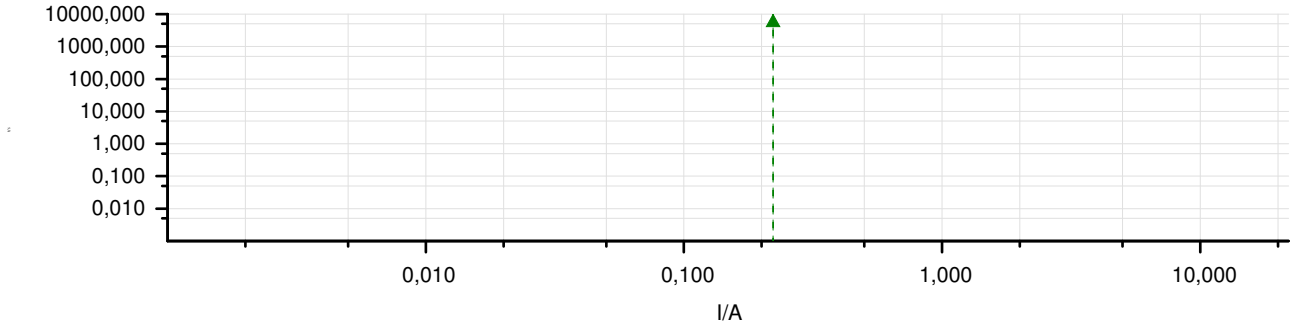
Type	Angle
L2-E	10,00 °

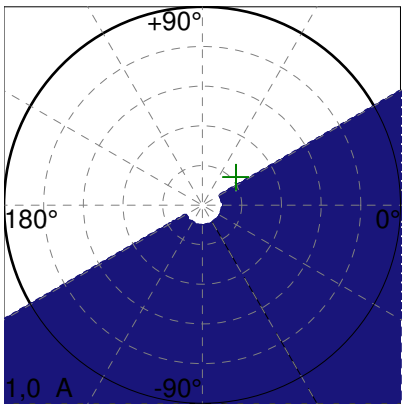




Charts for Fault Types:

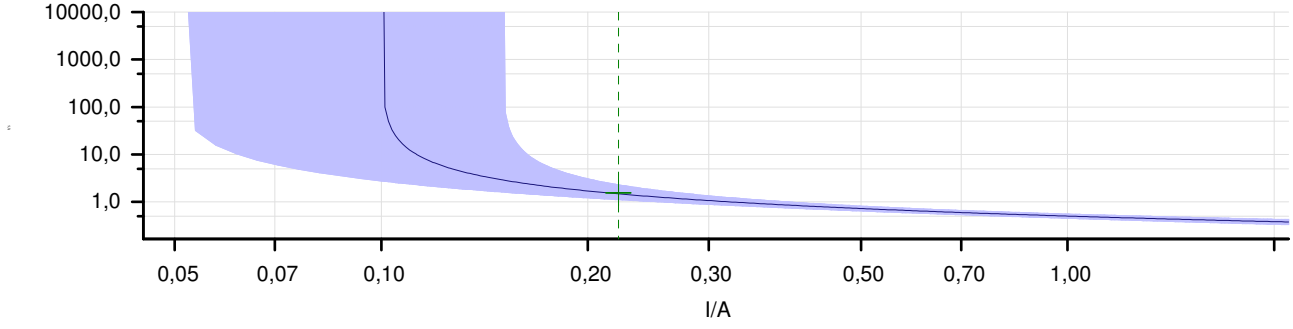
Type	Angle
L2-E	40,00 °

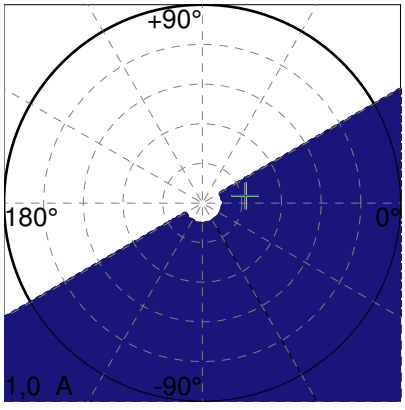




Charts for Fault Types:

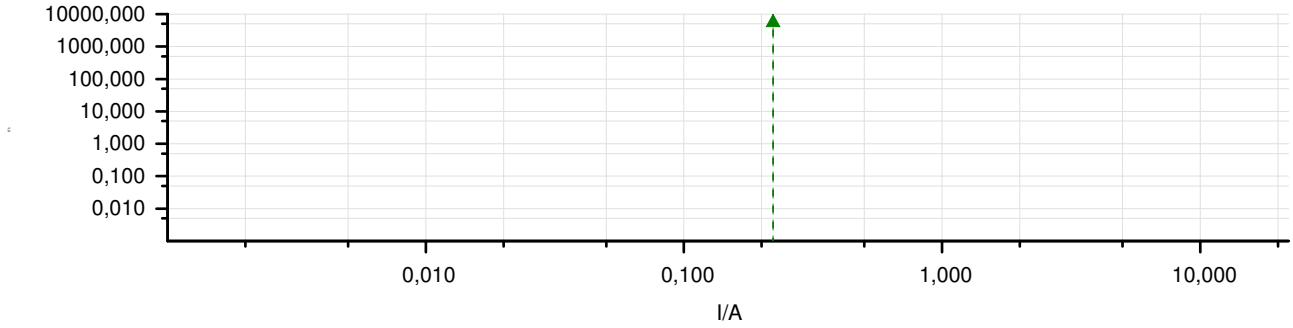
Type	Angle
L3-E	10,00 °

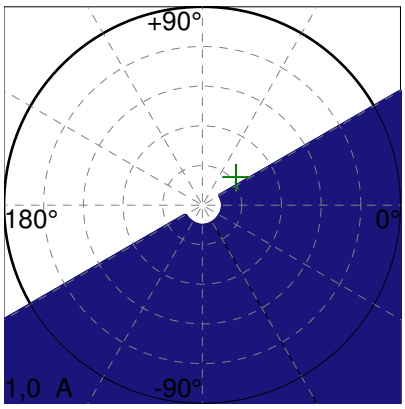




Charts for Fault Types:

Type	Angle
L3-E	40,00 °





State:

6 out of 6 points tested.
6 points passed.
0 points failed.

General Assessment: Test passed!

IN>2:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,04 s	VT connection:	n/a
TimeTolRel:	5,00 %	CT starpoint connection:	n/a
CurrentTolAbs:	0,05 Iref		
CurrentTolRel:	5,00 %		
Directional:	No		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I>1	IEC Definite Time	1,20 Iref	1,00 s	0,95	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	IN>1 67N	IEC Normal Inverse	0,10 Iref	0,17	0,95	Non Directional
Yes	IN>2	IEC Normal Inverse	0,20 Iref	0,30	0,95	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #7	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional
No	I #8	IEC Definite Time	2,00 Iref	1,00 s	0,95	Non Directional
No	I #9	IEC Definite Time	3,00 Iref	1,00 s	0,95	Non Directional

Elements - Zero Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #10	IEC Definite Time	0,33 Iref	1,00 s	0,95	Non Directional
No	I #11	IEC Definite Time	0,67 Iref	1,00 s	0,95	Non Directional
No	I #12	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	18-mar.-2019 14:59:33	Test End:	18-mar.-2019 15:00:13
User Name:		Manager:	
Company:			

T e s t S e t t i n g s :

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	240,0 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	No
Fault voltage LN (for all but two phase faults):	n/a
Fault voltage LL (for two phase faults):	n/a
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	IN>2	1,668	333,5 m A	n/a	4,085 s	3,044 s	6,296 s
L1-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,240 s	3,365 s
L1-E	IN>2	2,668	533,5 m A	n/a	2,119 s	1,843 s	2,476 s
L2-E	IN>2	1,668	333,5 m A	n/a	4,085 s	3,044 s	6,296 s
L2-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,240 s	3,365 s
L2-E	IN>2	2,668	533,5 m A	n/a	2,119 s	1,843 s	2,476 s
L3-E	IN>2	1,668	333,5 m A	n/a	4,085 s	3,044 s	6,296 s
L3-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,240 s	3,365 s
L3-E	IN>2	2,668	533,5 m A	n/a	2,119 s	1,843 s	2,476 s

Binary Outputs:

Name	State
Bin. out 1	0
Bin. out 2	0
Bin. out 3	0
Bin. out 4	0

Binary Inputs:

Trigger Logic: And

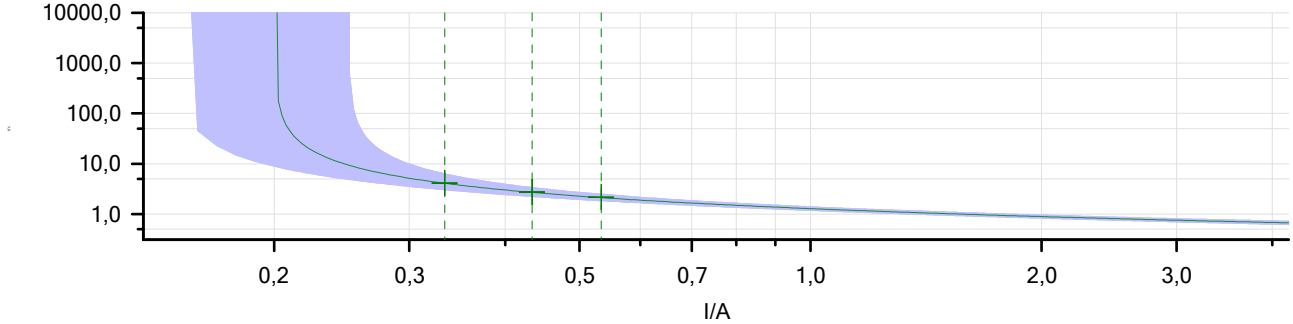
Name	Trigger State
Trip	1
Start	1
Bin. in 3	1
Bin. in 4	1
Bin. in 5	1
Bin. in 6	1
Bin. in 7	1
Bin. in 8	1
Bin. in 9	1
Bin. in 10	1

Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	IN>2	1,668	333,5 m A	n/a	4,085 s	4,134 s	1,191 %	No	Passed
L1-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,726 s	1,205 %	No	Passed
L1-E	IN>2	2,668	533,5 m A	n/a	2,119 s	2,153 s	1,586 %	No	Passed
L2-E	IN>2	1,668	333,5 m A	n/a	4,085 s	4,137 s	1,262 %	No	Passed
L2-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,723 s	1,090 %	No	Passed
L2-E	IN>2	2,668	533,5 m A	n/a	2,119 s	2,152 s	1,529 %	No	Passed
L3-E	IN>2	1,668	333,5 m A	n/a	4,085 s	4,142 s	1,399 %	No	Passed
L3-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,725 s	1,172 %	No	Passed
L3-E	IN>2	2,668	533,5 m A	n/a	2,119 s	2,136 s	783,9 m %	No	Passed

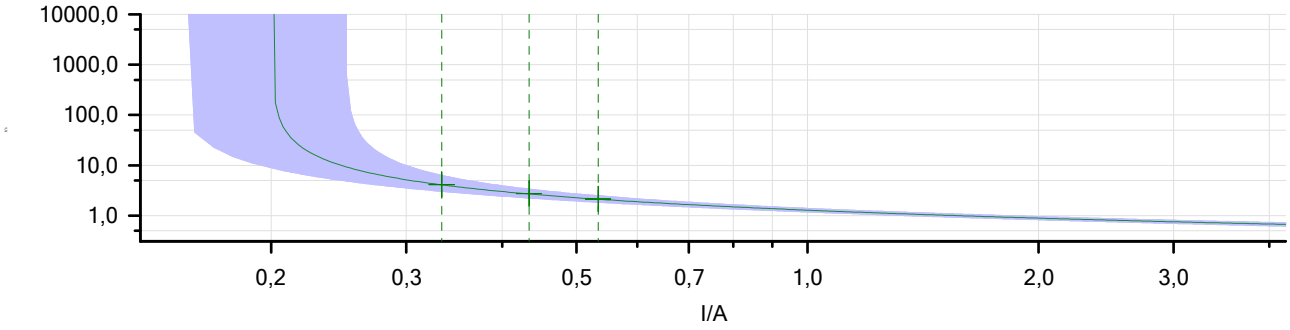
Charts for Fault Types:

Type	Angle
L1-E	n/a



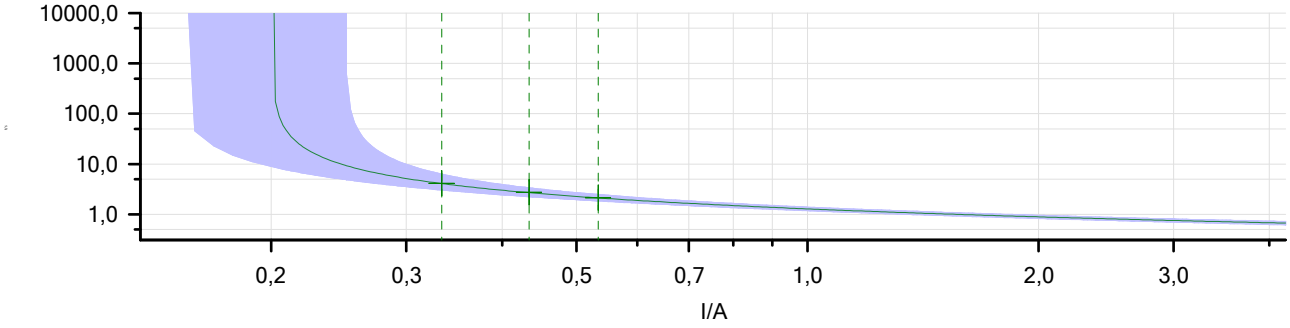
Charts for Fault Types:

Type	Angle
L2-E	n/a



Charts for Fault Types:

Type	Angle
L3-E	n/a



State:

9 out of 9 points tested.
9 points passed.
0 points failed.

General Assessment: Test passed!

IN>2 BLOQUEO X EMERG.:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,04 s	VT connection:	n/a
TimeTolRel:	5,00 %	CT starpoint connection:	n/a
CurrentTolAbs:	0,05 Iref		
CurrentTolRel:	5,00 %		
Directional:	No		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I>1	IEC Definite Time	1,20 Iref	1,00 s	0,95	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	IN>1 67N	IEC Normal Inverse	0,10 Iref	0,17	0,95	Non Directional
Yes	IN>2	IEC Normal Inverse	0,20 Iref	0,30	0,95	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #7	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional
No	I #8	IEC Definite Time	2,00 Iref	1,00 s	0,95	Non Directional
No	I #9	IEC Definite Time	3,00 Iref	1,00 s	0,95	Non Directional

Elements - Zero Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	I #10	IEC Definite Time	0,33 Iref	1,00 s	0,95	Non Directional
No	I #11	IEC Definite Time	0,67 Iref	1,00 s	0,95	Non Directional
No	I #12	IEC Definite Time	1,00 Iref	1,00 s	0,95	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	18-mar.-2019 15:13:15	Test End:	18-mar.-2019 15:14:44
User Name:		Manager:	
Company:			

T e s t S e t t i n g s :

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	240,0 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	No
Fault voltage LN (for all but two phase faults):	n/a
Fault voltage LL (for two phase faults):	n/a
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	IN>2	1,668	333,5 m A	n/a	4,085 s	3,044 s	6,296 s
L1-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,240 s	3,365 s
L1-E	IN>2	2,668	533,5 m A	n/a	2,119 s	1,843 s	2,476 s
L2-E	IN>2	1,668	333,5 m A	n/a	4,085 s	3,044 s	6,296 s
L2-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,240 s	3,365 s
L2-E	IN>2	2,668	533,5 m A	n/a	2,119 s	1,843 s	2,476 s
L3-E	IN>2	1,668	333,5 m A	n/a	4,085 s	3,044 s	6,296 s
L3-E	IN>2	2,168	433,5 m A	n/a	2,693 s	2,240 s	3,365 s
L3-E	IN>2	2,668	533,5 m A	n/a	2,119 s	1,843 s	2,476 s

Binary Outputs:

Name	State
Bin. out 1	0
Bin. out 2	0
Bin. out 3	0
Bin. out 4	0

Binary Inputs:

Trigger Logic: And

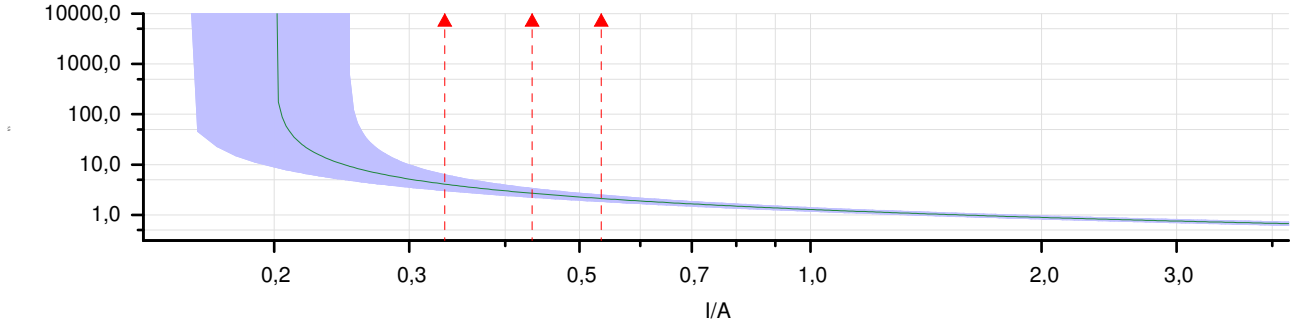
Name	Trigger State
Trip	1
Start	1
Bin. in 3	1
Bin. in 4	1
Bin. in 5	1
Bin. in 6	1
Bin. in 7	1
Bin. in 8	1
Bin. in 9	1
Bin. in 10	1

Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	IN>2	1,668	333,5 m A	n/a	4,085 s	No trip	n/a	No	Failed
L1-E	IN>2	2,168	433,5 m A	n/a	2,693 s	No trip	n/a	No	Failed
L1-E	IN>2	2,668	533,5 m A	n/a	2,119 s	No trip	n/a	No	Failed
L2-E	IN>2	1,668	333,5 m A	n/a	4,085 s	No trip	n/a	No	Failed
L2-E	IN>2	2,168	433,5 m A	n/a	2,693 s	No trip	n/a	No	Failed
L2-E	IN>2	2,668	533,5 m A	n/a	2,119 s	No trip	n/a	No	Failed
L3-E	IN>2	1,668	333,5 m A	n/a	4,085 s	No trip	n/a	No	Failed
L3-E	IN>2	2,168	433,5 m A	n/a	2,693 s	No trip	n/a	No	Failed
L3-E	IN>2	2,668	533,5 m A	n/a	2,119 s	No trip	n/a	No	Failed

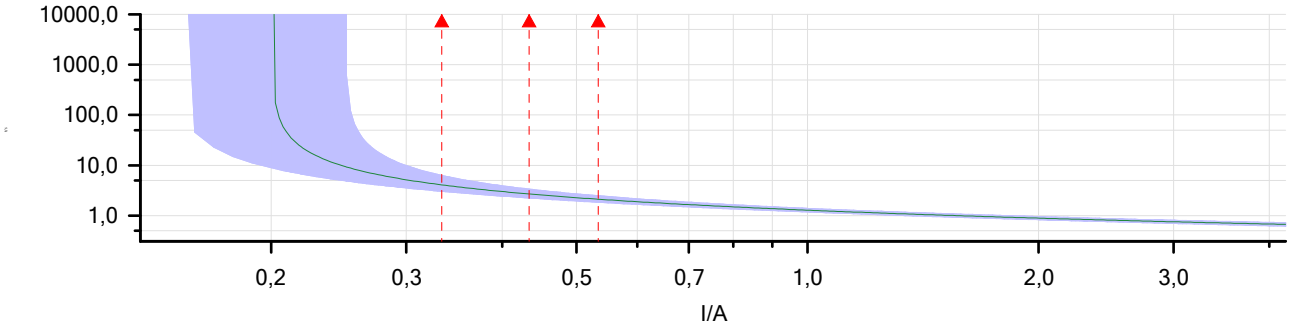
Charts for Fault Types:

Type	Angle
L1-E	n/a



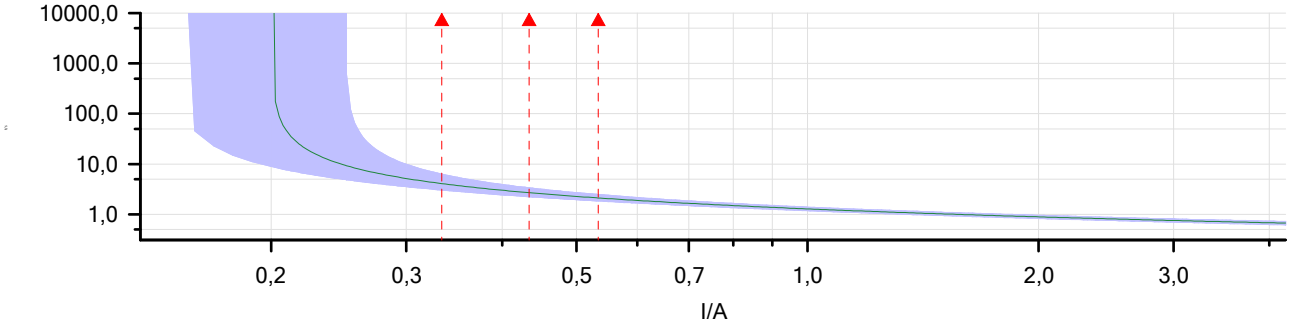
Charts for Fault Types:

Type	Angle
L2-E	n/a



Charts for Fault Types:

Type	Angle
L3-E	n/a



State:

9 out of 9 points tested.
0 points passed.
9 points failed.

General Assessment: Test passed! (manually assessed!)

----------Group end:4.2 - 76N y Neutro----------

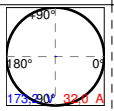
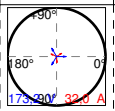
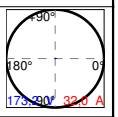
----------Group end:4. Sobrecorrientes----------
----------Group:5. SOTF - Switch On To Fault----------

32,84

SOTF PF 0 VOLT Y CORR; F: CORR FALLA Y VOLT BAJO OP.:

Test Settings

State	PRF1	F1	PF1
V L1-E	0,000 V 0,00 ° 50,000 Hz	35,00 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	0,000 V -120,00 ° 50,000 Hz	35,00 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	0,000 V 120,00 ° 50,000 Hz	35,00 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz

I L1	0,000 A 0,00 ° 50,000 Hz	4,019 A -86,96 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	4,019 A -206,96 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	4,019 A 33,04 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
Max. State Time	3,000 s	3,000 s	1,000 s
Trigger Logic			
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

Comment

Test Module

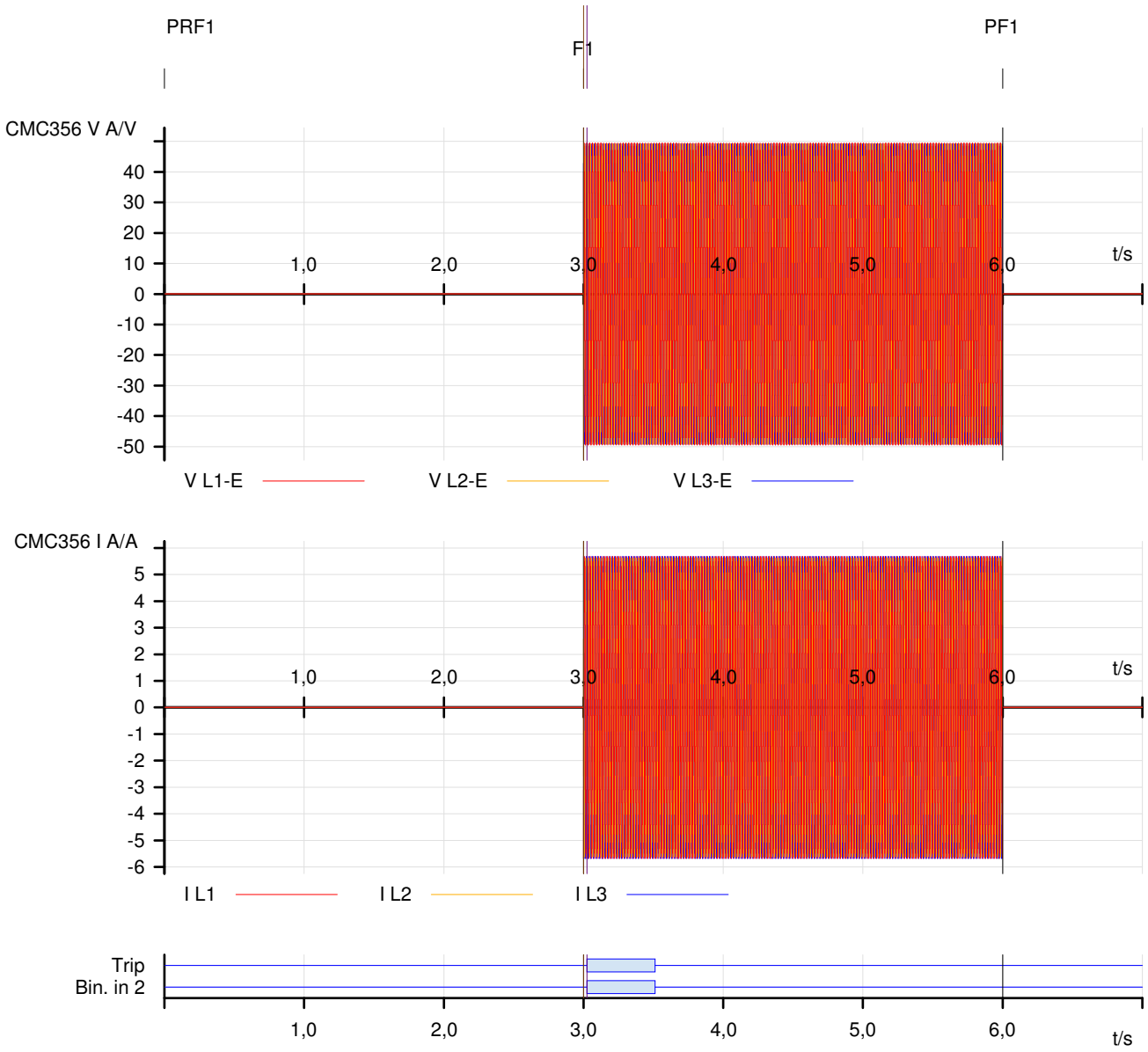
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	18-mar.-2019 16:10:07	Test End:	18-mar.-2019 16:10:16
User Name:		Manager:	
Company:			

Test Results

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
FALLA 1	F1	F1	Trip 0>1	0,000 s	70,00 ms	70,00 ms	24,50 ms	24,50 ms	+

Assess: + .. Passed x .. Failed o .. Not assessed



Cursor Data

	Time	Signal	Value
Cursor 1	3,025 s	<none>	n/a
Cursor 2	3,000 s	<none>	n/a
C2 - C1	-24,60 ms		n/a

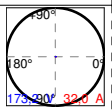
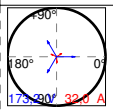
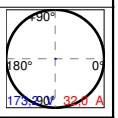
Event recorder

Time	Type	Signal name	Slope
3,025 s	Input	Trip	0>1
3,025 s	Input	Bin. in 2	0>1
3,512 s	Input	Trip	1>0
3,512 s	Input	Bin. in 2	1>0

Test State:
Test passed

SOTF PF:0 VOLT Y CORR; F: CORR FALLA Y VOLT NOM. :

Test Settings

State	PRF1	F1	PF1
V L1-E	0,000 V 0,00 ° 50,000 Hz	66,40 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	0,000 V -120,00 ° 50,000 Hz	66,40 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	0,000 V 120,00 ° 50,000 Hz	66,40 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	4,019 A -86,96 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	4,019 A -206,96 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	4,019 A 33,04 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
Max. State Time	3,000 s	3,000 s	1,000 s
Trigger Logic			
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

Comment

Test Module

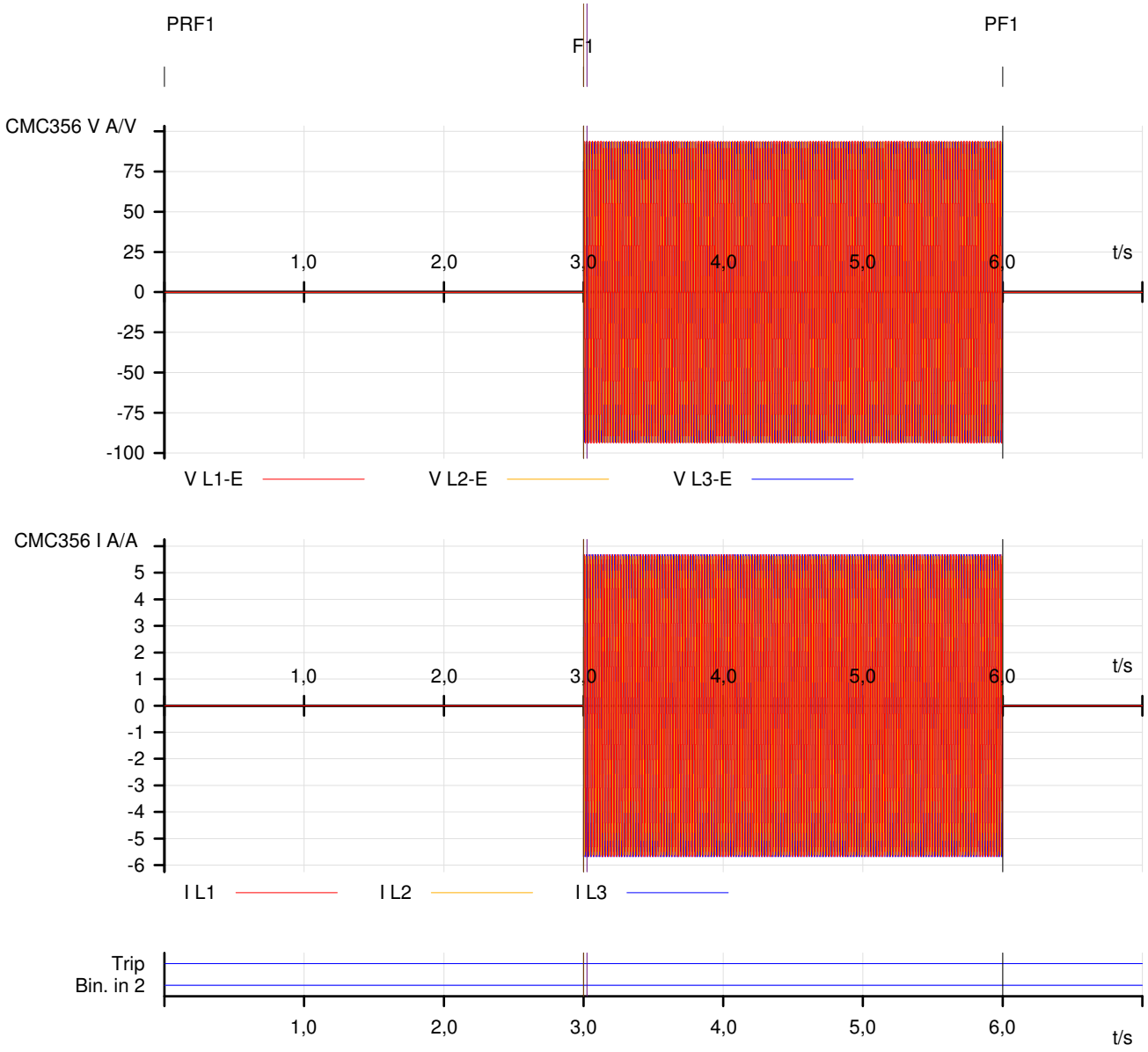
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	18-mar.-2019 16:14:03	Test End:	18-mar.-2019 16:14:12
User Name:		Manager:	
Company:			

Test Results

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
FALLA 1	F1	F1	Trip 0>1	0,000 s	70,00 ms	70,00 ms			x

Assess: + .. Passed x .. Failed o .. Not assessed



Cursor Data

	Time	Signal	Value
Cursor 1	3,02 s	<none>	n/a
Cursor 2	3,00 s	<none>	n/a
C2 - C1	-24,60 ms		n/a

Event recorder

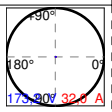
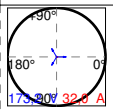
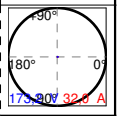
Time	Type	Signal name	Slope

Test State:

Test passed (manually assessed!)

SOTF PF:0 VOLT Y CORR; F: CORR NOM Y VOLT BAJO:

Test Settings

State	PRF1	F1	PF1
V L1-E	0,000 V 0,00 ° 50,000 Hz	35,00 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	0,000 V -120,00 ° 50,000 Hz	35,00 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	0,000 V 120,00 ° 50,000 Hz	35,00 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	310,0 mA -86,96 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	310,0 mA -206,96 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	310,0 mA 33,04 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
Max. State Time	3,000 s	3,000 s	1,000 s
Trigger Logic			
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

Comment

Test Module

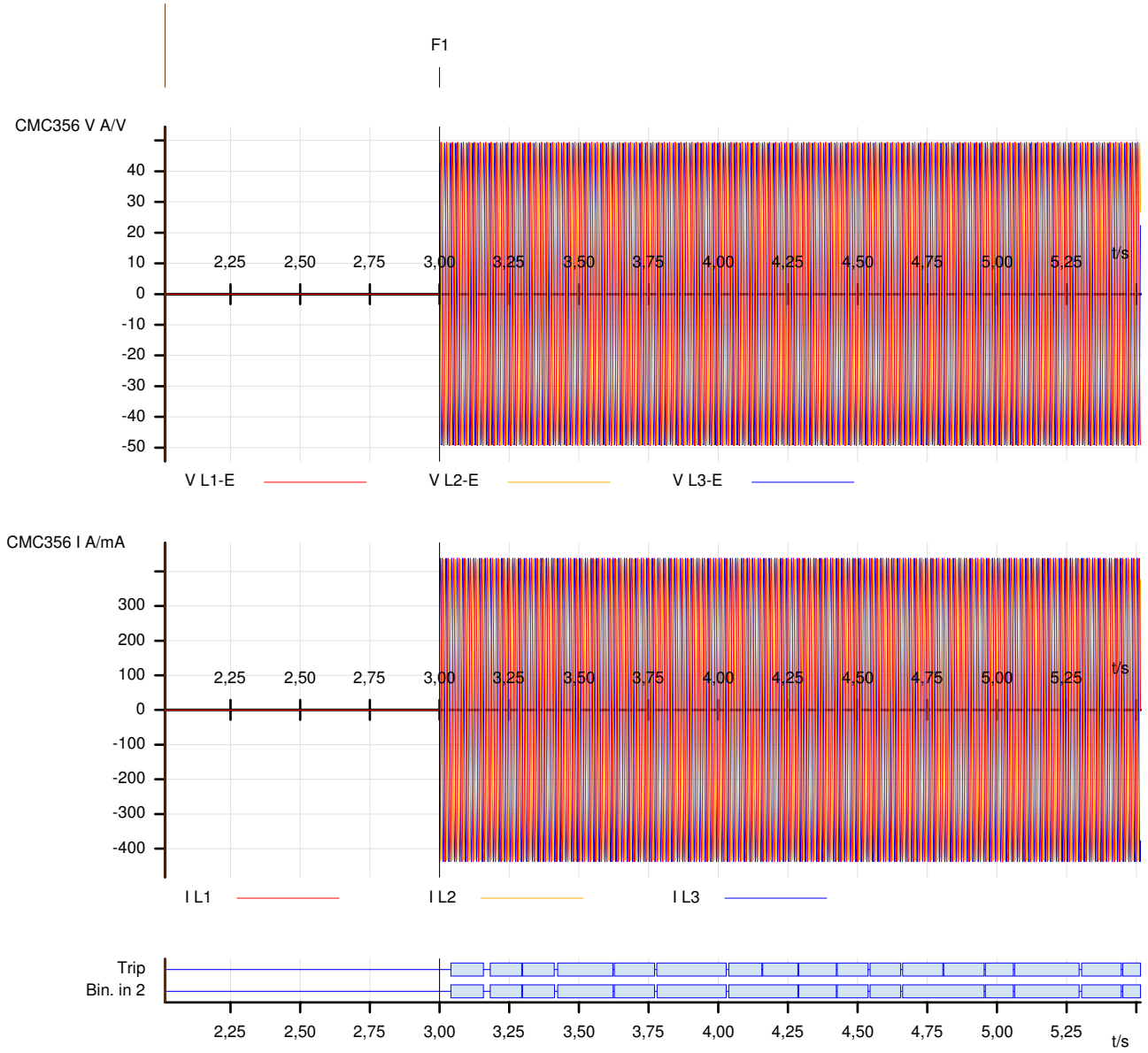
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	18-mar.-2019 16:24:32	Test End:	18-mar.-2019 16:24:41
User Name:		Manager:	
Company:			

Test Results

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
FALLA 1	F1	F1	Trip 0>1	0,000 s	70,00 ms	70,00 ms	39,90 ms	39,90 ms	+

Assess: + .. Passed x .. Failed o .. Not assessed



Cursor Data

	Time	Signal	Value
Cursor 1	383,0 ms	<none>	n/a
Cursor 2	383,0 ms	<none>	n/a
C2 - C1	0,000 s		n/a

Event recorder

Time	Type	Signal name	Slope
3,040 s	Input	Trip	0>1

3,040 s	Input	Bin. in 2	0>1
3,158 s	Input	Trip	1>0
3,158 s	Input	Bin. in 2	1>0
3,182 s	Input	Trip	0>1
3,182 s	Input	Bin. in 2	0>1
3,294 s	Input	Trip	1>0
3,294 s	Input	Bin. in 2	1>0
3,297 s	Input	Trip	0>1
3,298 s	Input	Bin. in 2	0>1
3,412 s	Input	Trip	1>0
3,412 s	Input	Bin. in 2	1>0
3,423 s	Input	Trip	0>1
3,423 s	Input	Bin. in 2	0>1
3,622 s	Input	Trip	1>0
3,622 s	Input	Bin. in 2	1>0
3,626 s	Input	Bin. in 2	0>1
3,627 s	Input	Trip	0>1
3,771 s	Input	Trip	1>0
3,771 s	Input	Bin. in 2	1>0
3,780 s	Input	Trip	0>1
3,780 s	Input	Bin. in 2	0>1
4,028 s	Input	Trip	1>0
4,028 s	Input	Bin. in 2	1>0
4,037 s	Input	Trip	0>1
4,038 s	Input	Bin. in 2	0>1
4,156 s	Input	Trip	1>0
4,159 s	Input	Trip	0>1
4,285 s	Input	Trip	1>0
4,286 s	Input	Bin. in 2	1>0
4,289 s	Input	Trip	0>1
4,289 s	Input	Bin. in 2	0>1
4,423 s	Input	Trip	1>0
4,423 s	Input	Bin. in 2	1>0
4,427 s	Input	Trip	0>1
4,427 s	Input	Bin. in 2	0>1
4,538 s	Input	Trip	1>0
4,538 s	Input	Bin. in 2	1>0
4,544 s	Input	Trip	0>1
4,544 s	Input	Bin. in 2	0>1
4,654 s	Input	Trip	1>0
4,654 s	Input	Bin. in 2	1>0
4,661 s	Input	Trip	0>1
4,662 s	Input	Bin. in 2	0>1
4,806 s	Input	Trip	1>0
4,809 s	Input	Trip	0>1
4,954 s	Input	Trip	1>0
4,954 s	Input	Bin. in 2	1>0
4,958 s	Input	Bin. in 2	0>1
4,958 s	Input	Trip	0>1
5,059 s	Input	Trip	1>0
5,059 s	Input	Bin. in 2	1>0
5,062 s	Input	Bin. in 2	0>1
5,062 s	Input	Trip	0>1
5,294 s	Input	Trip	1>0
5,294 s	Input	Bin. in 2	1>0
5,303 s	Input	Trip	0>1
5,304 s	Input	Bin. in 2	0>1
5,446 s	Input	Trip	1>0
5,446 s	Input	Bin. in 2	1>0
5,451 s	Input	Trip	0>1
5,451 s	Input	Bin. in 2	0>1
5,570 s	Input	Trip	1>0
5,571 s	Input	Bin. in 2	1>0

5,578 s	Input	Trip	0>1
5,578 s	Input	Bin. in 2	0>1
5,677 s	Input	Trip	1>0
5,677 s	Input	Bin. in 2	1>0
5,692 s	Input	Bin. in 2	0>1
5,693 s	Input	Trip	0>1
5,810 s	Input	Trip	1>0
5,810 s	Input	Bin. in 2	1>0
5,820 s	Input	Trip	0>1
5,820 s	Input	Bin. in 2	0>1
5,964 s	Input	Trip	1>0
5,964 s	Input	Bin. in 2	1>0
5,969 s	Input	Bin. in 2	0>1
5,969 s	Input	Trip	0>1
6,069 s	Input	Trip	1>0
6,069 s	Input	Bin. in 2	1>0

Test State:
Test passed

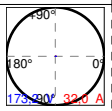
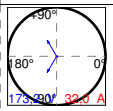
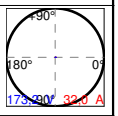
Group end:5. SOTF - Switch On To Fault

Group:13. 50BF - CB Fail

50BF POR TRIP:

Test Settings

State	PRF	FALLA 50BF Y RETRIP	POSTFALLA
V L1-E	0,000 V 0,00 ° 50,000 Hz	5,059 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	0,000 V -120,00 ° 50,000 Hz	66,40 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	0,000 V 120,00 ° 50,000 Hz	66,40 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	671,6 mA -81,87 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz

I L3	0,000 A 120,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
Max. State Time	100,0 ms	300,0 ms	50,00 ms
Trigger Logic			
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

Comment

Test Module

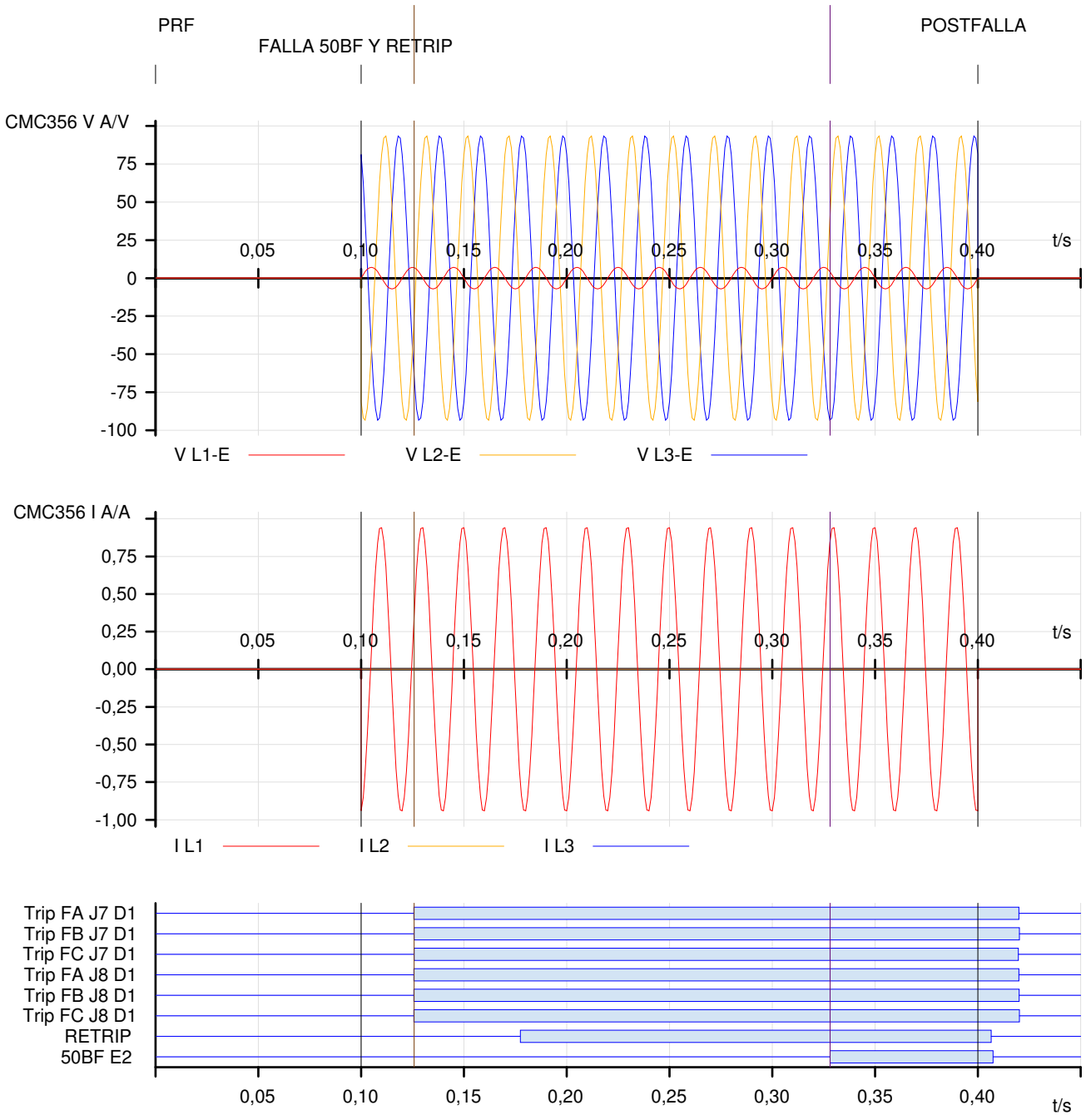
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	18-mar.-2019 17:06:50	Test End:	18-mar.-2019 17:06:52
User Name:		Manager:	
Company:			

Test Results

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
TRIP			Trip FA J7 D1 0>1	150,0 ms	70,00 ms	70,00 ms			o
RETRIP	FALLA 50BF Y RETRIP	FALLA 50BF Y RETRIP	Trip FB J7 D1 0>1	50,00 ms	70,00 ms	70,00 ms	25,80 ms	-24,20 ms	+
50BF	FALLA 50BF Y RETRIP	FALLA 50BF Y RETRIP	Trip FC J7 D1 0>1	200,0 ms	70,00 ms	70,00 ms	25,80 ms	-174,2 ms	x

Assess: + .. Passed x .. Failed o .. Not assessed



Cursor Data

	Time	Signal	Value
Cursor 1	328,1 ms	<none>	n/a
Cursor 2	125,8 ms	<none>	n/a
C2 - C1	-202,3 ms		n/a

Event recorder

Time	Type	Signal name	Slope
125,6 ms	Input	Trip FA J7 D1	0>1
125,6 ms	Input	Trip FC J8 D1	0>1
125,7 ms	Input	Trip FA J8 D1	0>1
125,7 ms	Input	Trip FB J8 D1	0>1
125,8 ms	Input	Trip FB J7 D1	0>1
125,8 ms	Input	Trip FC J7 D1	0>1
177,5 ms	Input	RETRIP	0>1
328,1 ms	Input	50BF E2	0>1
406,5 ms	Input	RETRIP	1>0
407,4 ms	Input	50BF E2	1>0
419,7 ms	Input	Trip FC J7 D1	1>0
420,0 ms	Input	Trip FA J7 D1	1>0
420,0 ms	Input	Trip FA J8 D1	1>0
420,1 ms	Input	Trip FB J8 D1	1>0
420,2 ms	Input	Trip FB J7 D1	1>0
420,2 ms	Input	Trip FC J8 D1	1>0

Test State:

Test passed (manually assessed!)

Group end:13. 50BF - CB Fail

PROTOCOLO DE PRUEBAS CEN
Diagonal 3 – Protección de Línea STEN – SCHA cto1 – Sistema 1

S/E: TEN ☒ CHA ☐ CUM ☐ NCA ☐ 500Kv ☐ 220Kv ☒ D1 ☐ D2 ☐ D3 ☒

Objetivo de la prueba:	☒Protección Diferencial de Línea (F87L) S1 ☐Protección de Distancia (F21/21N) S1 ☐Protección Diferencial de Línea (F87L) S2 ☐Protección de Distancia (F21/21N) S2

Condiciones iniciales: Equipo en explotación y funcionando correctamente	Equipos de Prueba: Omicron CMC 356
Condiciones de la prueba: Protección bloqueada	Documentos de referencia: EE-ES-2017-0936-R2_ANEXO_II_Ajustes Proyecto TEN-NUEVA CARDONES_Parte A

	Actividades realizadas:	APROBADO	RECHAZADO	NO APLICA	Observación:
1	Verificación Inicio Software y Hardware (Autorun)	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
2	Verificación de Entradas y Salidas digitales	✓	☐	☐	
3	Verificación de medidas (Entradas Analógicas) ☒ I1E,I2E,I3E ☐ IS1E, IS2E,IS3E ☐ F1E,F2E,F3E ☐ F123(+) ☐ F123(30°) ☐ Hz ☐ MW ☐ MVAR ☐ COS ø	✓	☐	☐	
4	Verificación de block de pruebas	✓	☐	☐	
5	=> Función F87L ☒ Arranque ☒ Tiempo de operación ☒ Caract. I dif. ☒ Estabilidad ☒ Bloqueo ☐ Intertrip ☐ Búsqueda ☐ TDD	✓	☐	☐	

Software Versión: MICOM S1 Agile V1.3.1	Comentarios y Conclusión del Protocolo: Los resultados obtenidos de las pruebas fueron satisfactorios
Firmware: P54681GL6M0760M	

Documentos adjuntos:
Informe Omicron

TEN	TEN	CEN
Nombre: Pablo Alvarez Sana	Nombre: Jean Paul Mora	Nombre:
Fecha: 18 – Marzo – 2019	Fecha: 22 – Abril – 2019	Fecha:
Firma: 	Firma: 	Firma:

PROTOCOLO DE PRUEBAS CEN

Diagonal 3 – Protección de Línea STEN – SCHA cto1 – Sistema 1

S/E: TEN ☒ CHA ☐ CUM ☐ NCA ☐ 500Kv ☐ 220Kv ☒ D1 ☐ D2 ☐ D3 ☒

Objetivo de la prueba:	☒Protección Diferencial de Línea (F87L) S1 ☐Protección de Distancia (F21/21N) S1 ☐Protección Diferencial de Línea (F87L) S2 ☐Protección de Distancia (F21/21N) S2
Condiciones iniciales: Equipo en explotación y funcionando correctamente	Equipos de Prueba: Omicron CMC 356
Condiciones de la prueba: Protección bloqueada	Documentos de referencia: EE-ES-2017-0936-R2_ANEXO_II_Ajustes Proyecto TEN-NUEVA CARDONES_Parte A

6	=> Función F21/21N ☐ Arranque F1,F2,F3,F123,F123(-30 ☐ Tiempo de operación ☐ Curva Carac. Z1,Z2,Z3,Z4 ☐ Búsqueda de Zona ☐ Sobrecorriente de emergencia ☐ Pérdida de Comunicación ☐ Localización de Falla ☐ 85A	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
7	=> Función F50/50N ☐ Arranque ☐ Tiempo de Operación	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
8	=> Función F51/51N ☐ Arranque ☒ Tiempo de operación ☐ Curva ANSI ☒ Curva IEC	✓	☐	☐	Se solicita probar solo 51 de fase y bloqueo de emergencia.
9	=> Función F50BF ☐ Arranque ☒ Tiempo 1 (Retrip) ☒ Tiempo 2 Disparo Barra ☐ Estabilidad ☐ Criterio de Arranque (Corriente) ☐ Criterio de Arranque (Contacto)	✓	☐	☐	Se prueba según lo solicitado solo por función interna de la protección.
10	=> Función F68 ☐ Bloqueo Z1	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.

Software Versión: MICOM S1 Agile V1.3.1	Comentarios y Conclusión del Protocolo: Los resultados obtenidos de las pruebas fueron satisfactorios
Firmware: P54681GL6M0760M	
Documentos adjuntos: Informe Omicron	

TEN	TEN	CEN
Nombre: Pablo Alvarez Sana	Nombre: Jean Paul Mora	Nombre:
Fecha: 18 – Marzo – 2019	Fecha: 22 – Abril – 2019	Fecha:
Firma: 	Firma: 	Firma:

UNA EMPRESA RED ELÉCTRICA INTERNACIONAL Y ENGIE

PROTOCOLO DE PRUEBAS CEN
Diagonal 3 – Protección de Línea STEN – SCHA cto1 – Sistema 1

S/E: TEN ☒ CHA ☐ CUM ☐ NCA ☐ 500Kv ☐ 220Kv ☒ D1 ☐ D2 ☐ D3 ☒

Objetivo de la prueba:	☒Protección Diferencial de Línea (F87L) S1 ☐Protección de Distancia (F21/21N) S1 ☐Protección Diferencial de Línea (F87L) S2 ☐Protección de Distancia (F21/21N) S2

Condiciones iniciales: Equipo en explotación y funcionando correctamente	Equipos de Prueba: Omicron CMC 356
Condiciones de la prueba: Protección bloqueada	Documentos de referencia: EE-ES-2017-0936-R2_ANEXO_II_Ajustes Proyecto TEN-NUEVA CARDONES_Parte A

11 => Función F27 y Función F59 ☐ Arranque ☐ Tiempo de operación	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
12 => Función F67/67N ☐ Arranque ☒ Tiempo de operación ☒ Zona de operación	✓	☐	☐	Solo se prueba la 67N, y bloqueo de la función por emergencia.
13 => Recierre Monopolar ☐ Exitoso ☐ Bloqueo Recierre ☐ Tiempo Muerto ☐ Por Sistema S2	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
14 => Teleprotección ☒ 85A ☐ 85B ☐ 85C ☐ 85D	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
15 => Función 50 ST (Cabo de línea) ☐ Arranque ☐ Tiempo de operación ☐ Bloqueo	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
16 => Cierre contra falla ☒ Arranque ☒ Tiempo de operación	✓	☐	☐	Se prueba también bloqueo de la función por incumplimiento de condiciones.
17 => Función 60 ☐ Bloqueo 21/21N ☐ Bloqueo direccionalidad 67N	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.

Software Versión: MICOM S1 Agile V1.3.1	Comentarios y Conclusión del Protocolo: Los resultados obtenidos de las pruebas fueron satisfactorios
Firmware: P54681GL6M0760M	

Documentos adjuntos:
Informe Omicron

TEN	TEN	CEN
Nombre: Pablo Alvarez Sana	Nombre: Jean Paul Mora	Nombre:
Fecha: 18 – Marzo – 2019	Fecha: 22 – Abril – 2019	Fecha:
Firma: 	Firma: 	Firma:

PROTOCOLO DE PRUEBAS CEN
Diagonal 3 – Protección de Línea STEN – SCHA cto1 – Sistema 1

S/E: TEN ☒ CHA ☐ CUM ☐ NCA ☐ 500Kv ☐ 220Kv ☒ D1 ☐ D2 ☐ D3 ☒

Objetivo de la prueba:	☒Protección Diferencial de Línea (F87L) S1 ☐Protección de Distancia (F21/21N) S1 ☐Protección Diferencial de Línea (F87L) S2 ☐Protección de Distancia (F21/21N) S2

Condiciones iniciales: Equipo en explotación y funcionando correctamente	Equipos de Prueba: Omicron CMC 356
Condiciones de la prueba: Protección bloqueada	Documentos de referencia: EE-ES-2017-0936-R2_ANEXO_II_Ajustes Proyecto TEN-NUEVA CARDONES_Parte A

18 Pruebas de redundancia de red ☐ IEC61850 ☐ Falla canal 1 ☐ Falla canal 2	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.

Software Versión: MICOM S1 Agile V1.3.1	Comentarios y Conclusión del Protocolo: Los resultados obtenidos de las pruebas fueron satisfactorios
Firmware: P54681GL6M0760M	
Documentos adjuntos: Informe Omicron	

TEN	TEN	CEN
Nombre: Pablo Alvarez Sana	Nombre: Jean Paul Mora	Nombre:
Fecha: 18 – Marzo – 2019	Fecha: 22 – Abril – 2019	Fecha:
Firma: 	Firma: 	Firma:

UNA EMPRESA
RED ELÉCTRICA INTERNACIONAL
Y ENGIE

OMICRON

Informe de Verificación de Protección Eléctrica 87L J7 S2 GE L90

Efectuado por:	Pablo Alvarez Sana	Fecha de Intervencion:	19 de Marzo 2019
	Felix Rivas Lopez		
N° EAP:	n/a	n° PT	PT_PYC_050_2019
Motivo:	Inspección del CEN	Subestación:	TEN
n° orden:		Ubicación Técnica:	Caseta de Control

25/03/2018

Firma Elaborador	Fecha	Firma Supervisor	Fecha

Test Object - Device Settings

Substation/Bay:

Substation:	Substation	Substation address:	Substation address
Bay:	bay	Bay address:	bay address

Device:

Name/description:	Multilin L90	Manufacturer:	GE
Device type:	Line Distance Protection	Device address:	device address
Serial/model number:	serial no.		
Additional info 1:	Protected object name		
Additional info 2:	L90-UG9-ALH-F8L-H6C-L8L-N6C-S6C-U4D-W7K		

Test Object - Differential Parameters

Protected Object:

Protected Object: Busbar
Vector Group: YY0

Winding/Leg Name:	Relay 1	Relay 2
Voltage:	220,00 kV	220,00 kV
Power:	0,38 MVA	0,38 MVA
Starpoint Grounding:	No	No
Delta-connected CT:	No	No

CT:

Winding/Leg Name:	Relay 1	Relay 2
CT Current Prim:	4000,00 A	4000,00 A
CT Current Sec:	1,00 A	1,00 A
CT Grounding:	tow. Prot. Obj.	tow. Prot. Obj.
Gnd CT Prim Current:	200,00 A	800,00 A
Gnd CT Sec Current:	1,00 A	1,00 A
Gnd CT Grounding:	n/a	n/a

Protection device:

Reference Winding:	Relay 1		
Ibias Calculation:	max (Ip, Is) (K1 = 1,00)		
Zero Seq. Elimination:	none		
Reference Current:	PO nominal current		
Ground CT Used:	No		
Idiff>:	0,85 In		
Idiff>>:	0,00 In	tdiff>:	0,03 s
		tdiff>>:	0,03 s
Itol rel:	3,00 %		
Itol abs:	0,05 In	ttol rel:	1,00 %
		ttol abs:	0,01 s

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,01 s	VT connection:	At protected object
TimeTolRel:	5,00 %	CT starpoint connection:	To protected object
CurrentTolAbs:	0,01 Iref		
CurrentTolRel:	1,50 %		
Directional:	Yes		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Phase TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase IOC1	IEC Definite Time	1,20 Iref	1,02 s	0,97	Non Directional
No	Phase IOC2	IEC Definite Time	0,20 Iref	0,08 s	0,97	Non Directional
No	Phase IOC3	IEC Definite Time	0,30 Iref	0,03 s	0,97	Non Directional
No	Phase IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	Neutral TOC1	IEC Curve A (BS142)	0,10 Iref	0,17	0,97	Forward
No	Neutral TOC2	IEC Curve A (BS142)	0,20 Iref	0,30	0,97	Non Directional
No	Neutral TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC3	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 FWD	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 FWD	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Ground TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC3	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neg Seq TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neg Seq IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Hardware Configuration

Test Equipment

Type	Serial Number
CMC356	LC604U

Hardware Check

Performed At	Result	Details
19-03-2019 17:49:05	Passed	

Analog Outputs

Test Equipment		Test Object		
Device	Connector	Display Name	Connection Terminal	
CMC356 V A LC604U	1 2 3 N	V L1-E V L2-E V L3-E		
CMC356 V B LC604U	1 N			
CMC356 I A LC604U	1 2 3 N	I L1 I L2 I L3	FA J7 STEN FB J7 STEN FC J7STEN	
CMC356 I B LC604U	1 2 3 N	I(2)-1 I(2)-2 I(2)-3	FA J1SCHA FB J1SCHA FC J1SCHA	

Binary/Analog Inputs

Test Equipment		Test Object		
Device	**Connector**	**Display Name**	**Connection Terminal**	
CMC356 LC604U	1+	TRIP FA J7 D1	TRIP FA J7 D1	
	1-			
	2+	TRIP FB J7 D1	TRIP FB J7 D1	
	2-			
	3+	TRIP FC J7 D1	TRIP FC J7 D1	
	3-			
	4+	TRIP FA J8 D1	TRIP FA J8 D1	
	4-			
	5+	TRIP FB J8 D1	TRIP FB J8 D1	
	5-			
	6+	TRIP FC J8 D1	TRIP FC J8 D1	
	6-			
	7+	TRIP FA J7 D2	TRIP FA J7 D2	
	7-			
	8+	TRIP FC J7 D2	TRIP FC J7 D2	
	8-			
	9+	TRIP FA J8 D2	TRIP FA J8 D2	
	9-			
	10+	TRIP FC J8 D2	TRIP FC J8 D2	
	10-			
	1	Bin. in 11		
	2	Bin. in 12		
	N			

Group:2. Analogics channels tests

2.1 - Injection tests BALAN:

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	19-mar.-2019 10:33:00	Test End:	19-mar.-2019 10:35:00
User Name:		Manager:	
Company:			

Test Results

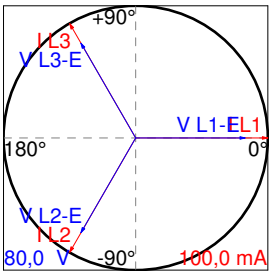
Title: inyección balanceada

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	V L1-E	66,40 V	0,00 °	50,000 Hz
	V L2-E	66,40 V	-120,00 °	50,000 Hz
	V L3-E	66,40 V	120,00 °	50,000 Hz
	I L1	100,0 mA	0,00 °	50,000 Hz
	I L2	100,0 mA	-120,00 °	50,000 Hz
	I L3	100,0 mA	120,00 °	50,000 Hz

Generator Settings

V L1-E	66,400V	0,00°
V L2-E	66,395V	-120,00°
V L3-E	66,400V	120,00°
I L1	0,100A	0,00°
I L2	0,100A	-120,00°
I L3	0,100A	120,00°



Binary Outputs

Binary Inputs

Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Bin. in 4	0	
Bin. in 5	0	
Bin. in 6	0	
Bin. in 7	0	
Bin. in 8	0	
Bin. in 9	0	
Bin. in 10	0	
Overload	0	

Analog Inputs

VDCin	IDCin
0,0001V	0,0001mA

Comment

CORRECTA

Synchronized mode (Synchronization to external signal failed)

Assessment

Passed 19-mar.-2019 10:33:54

Comment

Summary

1 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

INYECCIÓN BALANCEADA

Phase Current // STEN: J7S2 SCHA1: Actual Values: Metering: Source

Save | Restore | Default | Reset | VIEW ALL mode

PARAMETER	SOURCE 1	SOURCE 2	SOURCE 3
Name	Linea	B1	B2/J9
PHASORS	View	View	View
RMS Ia	400.925 A	400.925 A	0.000 A
RMS Ib	398.422 A	398.422 A	0.000 A
RMS Ic	399.506 A	399.506 A	0.000 A
RMS In	0.000 A	0.000 A	0.000 A
Phasor Ia	400.467 A -358.7 deg	400.467 A -358.7 deg	0.000 A 0.0 deg
Phasor Ib	398.361 A -118.6 deg	398.361 A -118.6 deg	0.000 A 0.0 deg
Phasor Ic	399.597 A -238.5 deg	399.597 A -238.5 deg	0.000 A 0.0 deg
Phasor In	0.000 A 0.0 deg	0.000 A 0.0 deg	0.000 A 0.0 deg
Zero Seq I0	0.000 A 0.0 deg	0.000 A 0.0 deg	0.000 A 0.0 deg

Phase Voltage // STEN: J7S2 SCHA1: Actual Values: Metering: Source

Save | Restore | Default | Reset | VIEW ALL mode

PARAMETER	SOURCE 1
Name	Linea
PHASORS	View
RMS Vag	132.850 kV
RMS Vbg	132.685 kV
RMS Vcg	132.750 kV
Phasor Vag	133.036 kV 0.0 deg
Phasor Vbg	132.906 kV -120.0 deg
Phasor Vcg	133.095 kV -240.0 deg
RMS Vab	229.991 kV
RMS Vbc	229.840 kV
RMS Vca	230.020 kV
Phasor Vab	230.254 kV -330.0 deg
Phasor Vbc	230.363 kV -90.0 deg
Phasor Vca	230.529 kV -210.0 deg
Zero Seq V0	0.000 V 0.0 deg

Phase Curre... | Phase Volta...

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	19-mar.-2019 10:35:50	Test End:	19-mar.-2019 10:37:15
User Name:		Manager:	
Company:			

Test Results

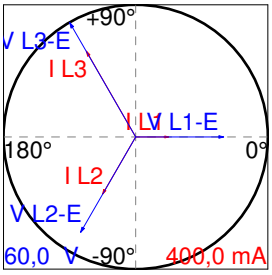
Title: inyección desbalanceada

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	V L1-E	40,00 V	0,00 °	50,000 Hz
	V L2-E	50,00 V	-120,00 °	50,000 Hz
	V L3-E	60,00 V	120,00 °	50,000 Hz
	I L1	100,0 mA	0,00 °	50,000 Hz
	I L2	200,0 mA	-120,00 °	50,000 Hz
	I L3	300,0 mA	120,00 °	50,000 Hz

Generator Settings

V L1-E	40,000V	0,00°
V L2-E	50,000V	-120,00°
V L3-E	60,000V	120,00°
I L1	0,100A	0,00°
I L2	0,200A	-120,00°
I L3	0,300A	120,00°



Binary Outputs

Binary Inputs

Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Bin. in 4	0	
Bin. in 5	0	
Bin. in 6	0	
Bin. in 7	0	
Bin. in 8	0	
Bin. in 9	0	
Bin. in 10	0	
Overload	0	

Analog Inputs

VDCin	IDCin
0,0000V	-0,0001mA

Comment

CORRECTO

Synchronized mode (Synchronization to external signal failed)

Assessment

Passed 19-mar.-2019 10:36:48

Comment

Summary

1 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

INYECCIÓN DESBALANCEADA

Phase Current // STEN: J7S2 SCHA1: Actual Values: Metering: Source

Save | Restore | Default | Reset | VIEW ALL mode

PARAMETER	SOURCE 1	SOURCE 2	SOURCE 3
Name	Linea	B1	B2/J9
PHASORS	View	View	View
RMS Ia	399.902 A	399.902 A	0.000 A
RMS Ib	798.172 A	798.172 A	0.000 A
RMS Ic	1.197 kA	1.197 kA	0.000 A
RMS In	690.735 A	690.735 A	0.000 A
Phasor Ia	399.887 A -358.7 deg	399.887 A -358.7 deg	0.000 A 0.0 deg
Phasor Ib	798.523 A -118.8 deg	798.523 A -118.8 deg	0.000 A 0.0 deg
Phasor Ic	1.197 kA -238.9 deg	1.197 kA -238.9 deg	0.000 A 0.0 deg
Phasor In	689.804 A -209.0 deg	689.804 A -209.0 deg	0.000 A 0.0 deg
Zero Seq I0	229.767 A -209.0 deg	229.767 A -209.0 deg	0.000 A 0.0 deg

Phase Voltage // STEN: J7S2 SCHA1: Actual Values: Metering: Source

Save | Restore | Default | Reset | VIEW ALL mode

PARAMETER	SOURCE 1
Name	Linea
PHASORS	View
RMS Vag	79.885 kV
RMS Vbg	99.961 kV
RMS Vcg	120.025 kV
Phasor Vag	80.100 kV 0.0 deg
Phasor Vbg	100.149 kV -120.1 deg
Phasor Vcg	120.158 kV -240.1 deg
RMS Vab	156.048 kV
RMS Vbc	190.860 kV
RMS Vca	174.244 kV
Phasor Vab	156.448 kV -326.4 deg
Phasor Vbc	191.092 kV -87.1 deg
Phasor Vca	174.524 kV -216.7 deg
Zero Seq V0	11.559 kV -210.2 deg

Phase Curre... Phase Volta...

2.3 - PRUEBA DE CONTATOS DE TRIP:

Test Settings

State	PRE FALLA	FALL	POST FALLA
V L1-E	0,000 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	0,000 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	0,000 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	1,500 A 0,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
I(2)-1	1,000 A 180,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I(2)-2	1,000 A 60,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I(2)-3	1,000 A -60,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz

Test Module

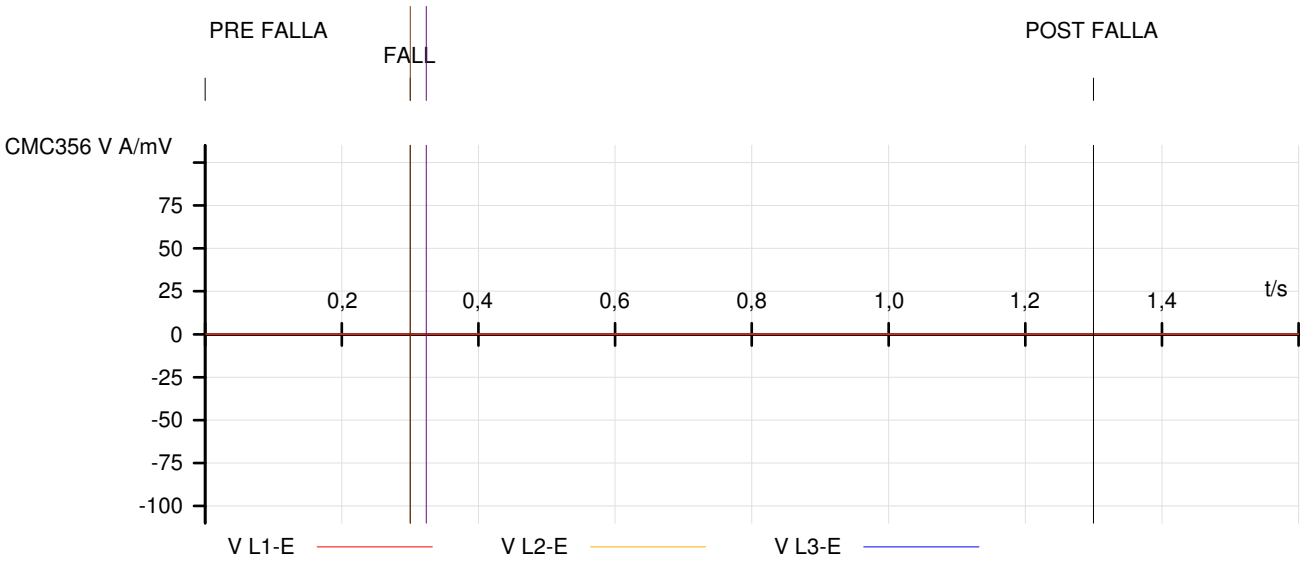
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	19-mar.-2019 10:43:32	Test End:	19-mar.-2019 10:43:35
User Name:		Manager:	
Company:			

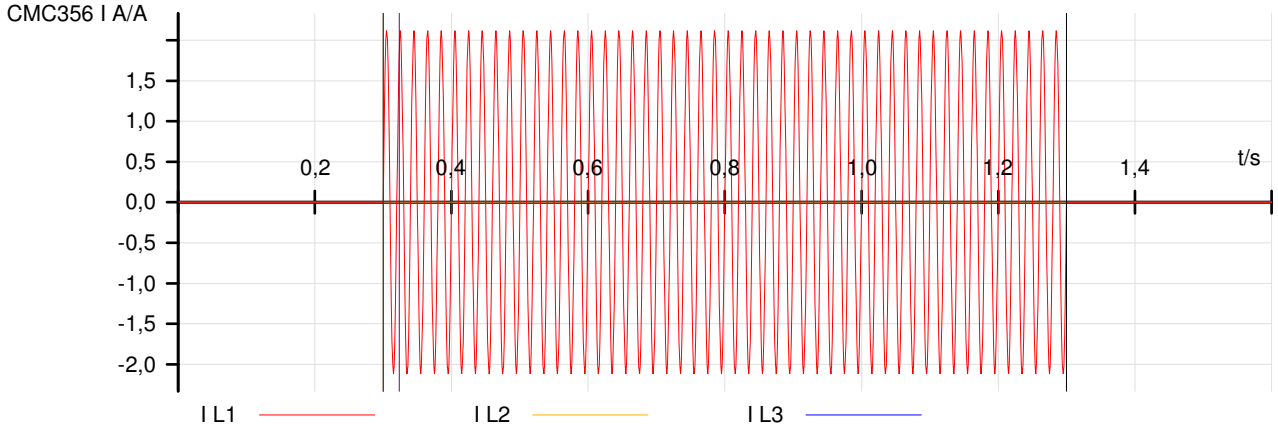
Test Results

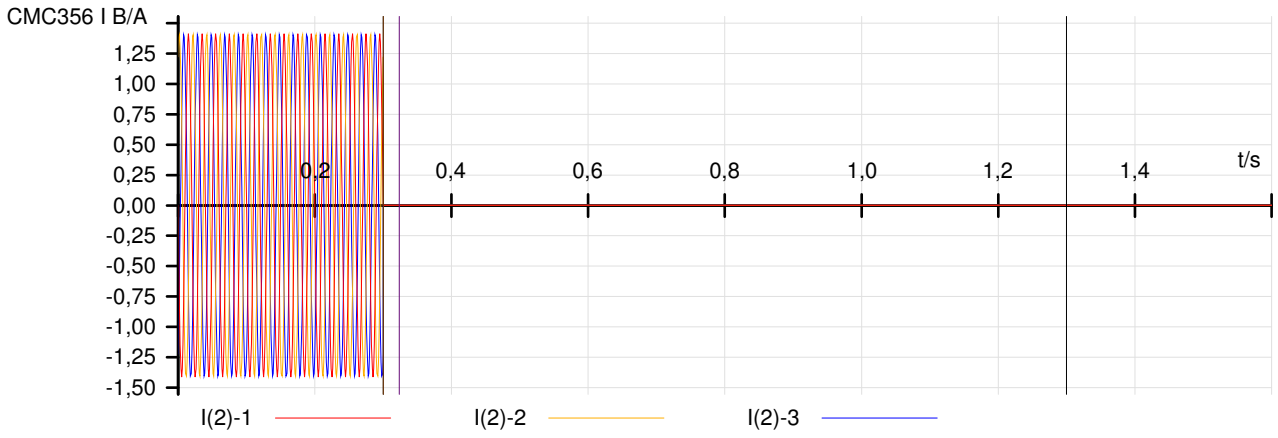
Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
									o

Assess: + .. Passed x .. Failed o .. Not assessed


PRE FALLA
FALL
POST FALLA
CMC356 V A/mV
75
50
25
0
-25
-50
-75
-100
0,2
0,4
0,6
0,8
1,0
1,2
1,4
t/s
V L1-E
V L2-E
V L3-E


CMC356 I A/A
1,5
1,0
0,5
0,0
-0,5
-1,0
-1,5
-2,0
0,2
0,4
0,6
0,8
1,0
1,2
1,4
t/s
I L1
I L2
I L3


CMC356 I B/A
1,25
1,00
0,75
0,50
0,25
0,00
-0,25
-0,50
-0,75
-1,00
-1,25
-1,50
0,2
0,4
0,6
0,8
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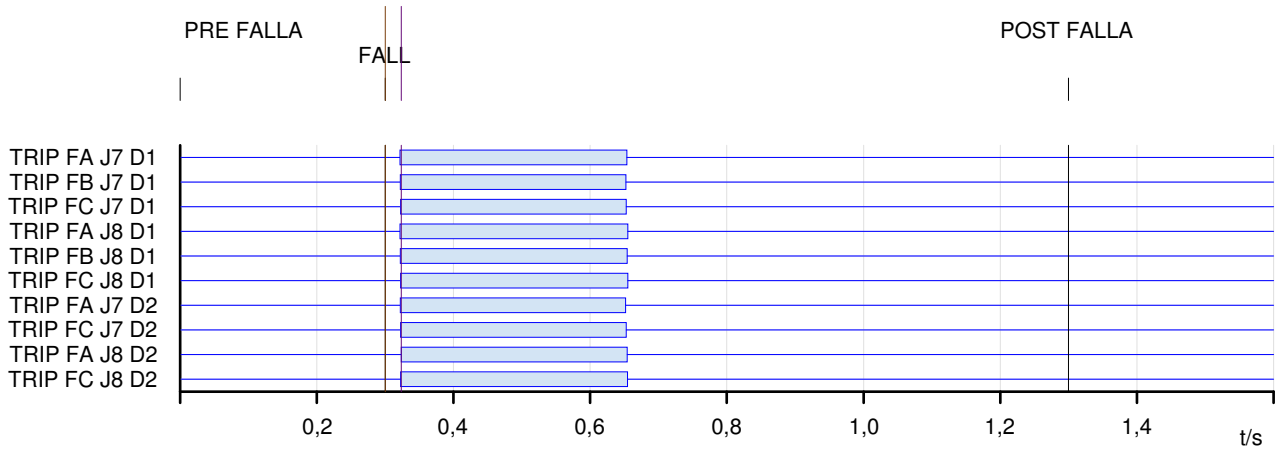
1,2
1,4
t/s
I(2)-1
I(2)-2
I(2)-3



Cursor Data

	Time	Signal	Value
Cursor 1	323,60 ms	<none>	n/a
Cursor 2	300,00 ms	<none>	n/a
C2 - C1	-23,60 ms		n/a

Test State:
Test passed

Group end:2. Analogics channels tests

Group:3. 87L - Differential Protection

Hardware Configuration

Test Equipment

Type	Serial Number
CMC356	LC604U

Hardware Check

Performed At	Result	Details
19-03-2019 16:57:32	Passed	

Analog Outputs

Test Equipment		Test Object		
Device	**Connector**	**Display Name**	**Connection Terminal**	
CMC356 V A LC604U	1 2 3 N	V L1-E V L2-E V L3-E		
CMC356 V B LC604U	1 N			
CMC356 I A LC604U	1 2 3 N	I L1 I L2 I L3	FA J7 STEN FB J7 STEN FC J7STEN	
CMC356 I B LC604U	1 2 3 N	I(2)-1 I(2)-2 I(2)-3	FA J1SCHA FB J1SCHA FC J1SCHA	

Binary/Analog Inputs

Test Equipment		Test Object		
Device	**Connector**	**Display Name**	**Connection Terminal**	
CMC356 LC604U	1+ 1- 2+ 2- 3+ 3- 4+ 4- 5+ 5- 6+ 6- 7+ 7- 8+ 8- 9+ 9- 10+ 10- 1 2 N	Bin. in 1 Bin. in 2 Bin. in 3 Bin. in 4 Bin. in 5 Bin. in 6 Bin. in 7 Bin. in 8 Bin. in 9 Bin. in 10 Bin. in 11 Bin. in 12	TRIP FA J7 D1 TRIP FB J7 D1 TRIP FC J7 D1 TRIP FA J8 D1 TRIP FB J8 D1 TRIP FC J8 D1 TRIP FA J7 D2 TRIP FC J7 D2 TRIP FA J8 D2 TRIP FC J8 D2	

INYECCIÓN LOCAL REMOTA :

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	19-mar.-2019 16:57:37	Test End:	19-mar.-2019 17:03:35
User Name:		Manager:	
Company:			

Test Results

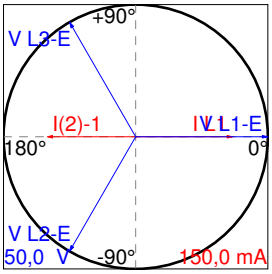
Title: PRUEBA DE INYECCIÓN LOCAL Y REMOTA

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	V L1-E	50,00 V	0,00 °	50,000 Hz
	V L2-E	50,00 V	-120,00 °	50,000 Hz
	V L3-E	50,00 V	120,00 °	50,000 Hz
	I L1	110,0 mA	0,00 °	50,000 Hz
	I L2	0,000 A	-120,00 °	50,000 Hz
	I L3	0,000 A	120,00 °	50,000 Hz

Generator Settings

V L1-E	50,000V	0,00°
V L2-E	50,000V	-120,00°
V L3-E	50,000V	120,00°
I L1	0,110A	0,00°
I L2	0,000A	-120,00°
I L3	0,000A	120,00°
I(2)-1	0,100A	180,00°
I(2)-2	0,000A	-120,00°
I(2)-3	0,000A	120,00°



Binary Inputs

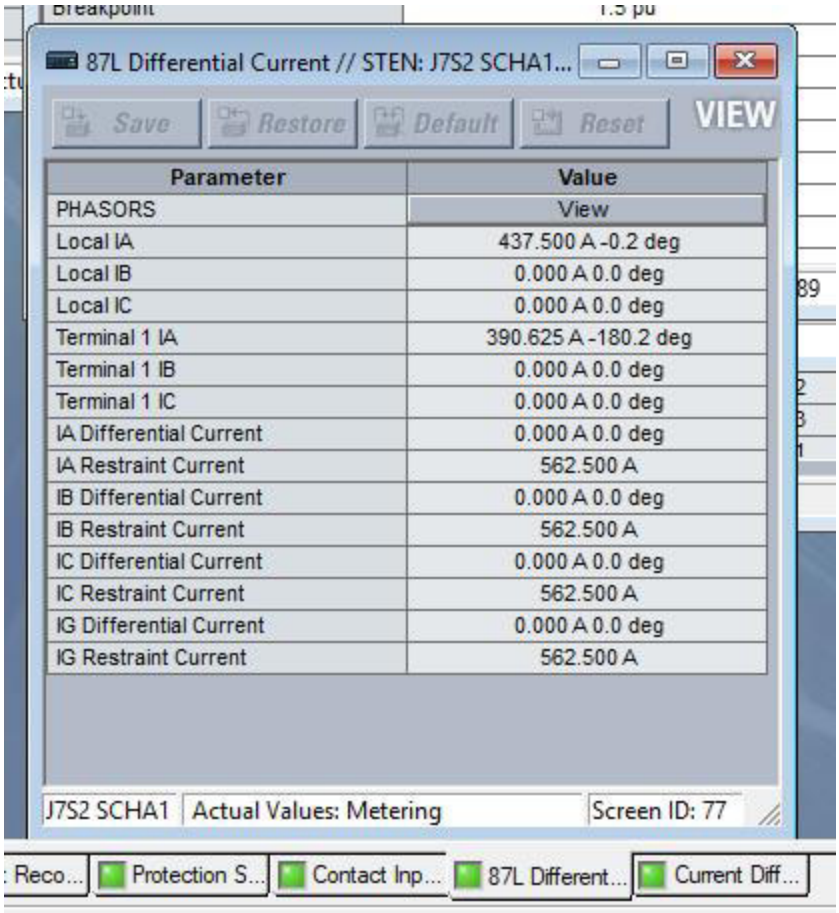
Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Bin. in 4	0	
Bin. in 5	0	
Bin. in 6	0	
Bin. in 7	0	
Bin. in 8	0	
Bin. in 9	0	
Bin. in 10	0	
Overload	0	

Summary

1 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

INYECCIÓN LOCAL REMOTA



ESTABILIDAD:

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	19-mar.-2019 17:25:25	Test End:	19-mar.-2019 17:35:03
User Name:		Manager:	
Company:			

Test Results

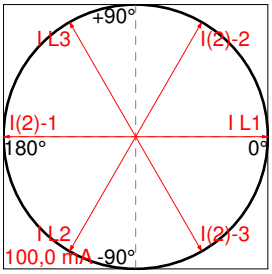
Title: ESTABILIDAD 100mA

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	I L1	100,0 mA	0,00 °	50,000 Hz
	I L2	100,0 mA	-120,00 °	50,000 Hz
	I L3	100,0 mA	120,00 °	50,000 Hz

Generator Settings

I L1	0,100A	0,00°
I L2	0,100A	-120,00°
I L3	0,100A	120,00°
I(2)-1	0,100A	180,00°
I(2)-2	0,100A	60,00°
I(2)-3	0,100A	300,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Overload	0	

Analog Inputs

VDCin	IDCin
0,0000V	0,0002mA

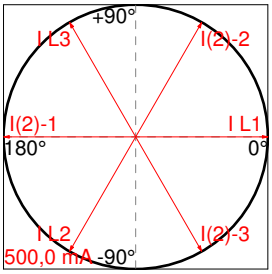
Title: ESTABILIDAD 500mA

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	I L1	500,0 mA	0,00 °	50,000 Hz
	I L2	500,0 mA	-120,00 °	50,000 Hz
	I L3	500,0 mA	120,00 °	50,000 Hz

Generator Settings

I L1	0,500A	0,00°
I L2	0,500A	-120,00°
I L3	0,500A	120,00°
I(2)-1	0,500A	180,00°
I(2)-2	0,500A	60,00°
I(2)-3	0,500A	300,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Overload	0	

Analog Inputs

VDCin	IDCin
0,0000V	0,0001mA

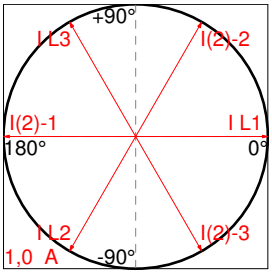
Title: ESTABILIDAD 1A

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	I L1	1,000 A	0,00 °	50,000 Hz
	I L2	1,000 A	-120,00 °	50,000 Hz
	I L3	1,000 A	120,00 °	50,000 Hz

Generator Settings

I L1	1,000A	0,00°
I L2	1,000A	-120,00°
I L3	1,000A	120,00°
I(2)-1	1,000A	180,00°
I(2)-2	1,000A	60,00°
I(2)-3	1,000A	300,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Overload	0	

Analog Inputs

VDCin	IDCin
0,0000V	0,0001mA

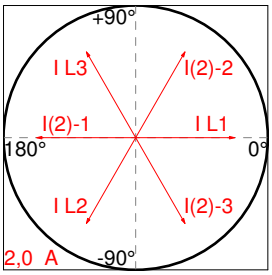
Title: ESTABILIDAD 1,5A

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	I L1	1,500 A	0,00 °	50,000 Hz
	I L2	1,500 A	-120,00 °	50,000 Hz
	I L3	1,500 A	120,00 °	50,000 Hz

Generator Settings

I L1	1,500A	0,00°
I L2	1,500A	-120,00°
I L3	1,500A	120,00°
I(2)-1	1,500A	180,00°
I(2)-2	1,500A	60,00°
I(2)-3	1,500A	300,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Overload	0	

Analog Inputs

VDCin	IDCin
0,0000V	0,0001mA

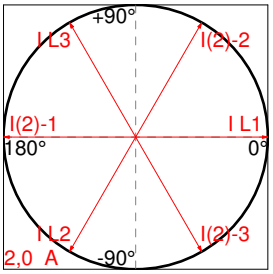
Title: ESTABILIDAD 2,0A

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	I L1	2,000 A	0,00 °	50,000 Hz
	I L2	2,000 A	-120,00 °	50,000 Hz
	I L3	2,000 A	120,00 °	50,000 Hz

Generator Settings

I L1	2,000A	0,00°
I L2	2,000A	-120,00°
I L3	2,000A	120,00°
I(2)-1	2,000A	180,00°
I(2)-2	2,000A	60,00°
I(2)-3	2,000A	300,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	0	
Bin. in 2	0	
Bin. in 3	0	
Overload	0	

Analog Inputs

VDCin	IDCin
0,0000V	0,0002mA

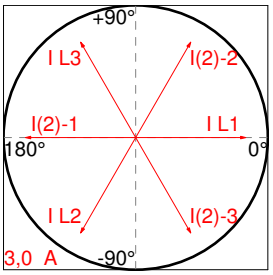
Title: ESTABILIDAD 2,5A

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	I L1	2,500 A	0,00 °	50,000 Hz
	I L2	2,500 A	-120,00 °	50,000 Hz
	I L3	2,500 A	120,00 °	50,000 Hz

Generator Settings

I L1	2,500A	0,00°
I L2	2,500A	-120,00°
I L3	2,500A	120,00°
I(2)-1	2,500A	180,00°
I(2)-2	2,500A	60,00°
I(2)-3	2,500A	300,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	0	

Bin. in 2	0	
Bin. in 3	0	
Overload	0	

Analog Inputs

VDCin	IDCin
0,0000V	0,0001mA

Summary

6 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

QuickCMC:

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	19-mar.-2019 17:36:35	Test End:	19-mar.-2019 17:44:02
User Name:		Manager:	
Company:			

Test Results

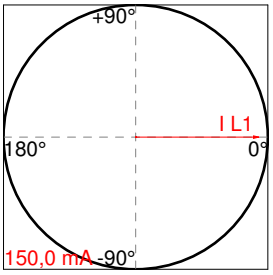
Title: PRUEBA DE BÚSQUEDA DE PU

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	I L1	140,0 mA	0,00 °	50,000 Hz
	I L2	0,000 A	-120,00 °	50,000 Hz
	I L3	0,000 A	120,00 °	50,000 Hz

Generator Settings

I L1	0,140A	0,00°
I L2	0,000A	-120,00°
I L3	0,000A	120,00°
I(2)-1	0,000A	0,00°
I(2)-2	0,000A	-120,00°
I(2)-3	0,000A	120,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	1->0	n/a
Bin. in 2	1->0	n/a
Bin. in 3	0->1	
Bin. in 4	0->1	
Bin. in 5	0->1	
Bin. in 6	0->1	
Overload	1->0	n/a

Title: PRUEBA DE BÚSQUEDA DE PU 2DO PTO

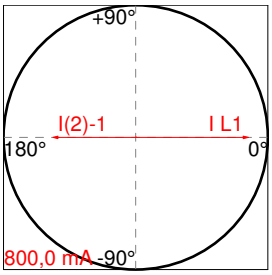
Fault Calculator:

Table Inputmode	Parameters (All values are secondary)

Direct	I L1	683,0 mA	0,00 °	50,000 Hz
	I L2	0,000 A	-120,00 °	50,000 Hz
	I L3	0,000 A	120,00 °	50,000 Hz

Generator Settings

I L1	0,683A	0,00°
I L2	0,000A	-120,00°
I L3	0,000A	120,00°
I(2)-1	0,500A	180,00°
I(2)-2	0,000A	60,00°
I(2)-3	0,000A	300,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	1->0	n/a
Bin. in 2	1->0	n/a
Bin. in 3	0->1	0,283s
Bin. in 4	0->1	0,285s
Bin. in 5	0->1	0,286s
Bin. in 6	0->1	0,283s
Overload	1->0	n/a

Summary

2 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

DISPAROS POR PTOS:

Test Module

Name:	OMICRON QuickCMC	Version:	3.20
Test Start:	19-mar.-2019 17:48:05	Test End:	19-mar.-2019 17:48:54
User Name:		Manager:	
Company:			

Test Results

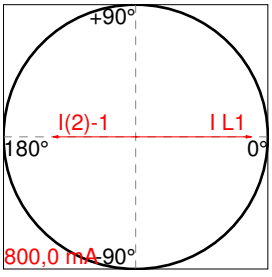
Title: PRUEBA DE BÚSQUEDA DE PU 2DO PTO

Fault Calculator:

Table Inputmode	Parameters (All values are secondary)			
Direct	I L1	700,0 mA	0,00 °	50,000 Hz
	I L2	0,000 A	-120,00 °	50,000 Hz
	I L3	0,000 A	120,00 °	50,000 Hz

Generator Settings

I L1	0,700A	0,00°
I L2	0,000A	-120,00°
I L3	0,000A	120,00°
I(2)-1	0,500A	180,00°
I(2)-2	0,000A	60,00°
I(2)-3	0,000A	300,00°



Binary Inputs

Name	Slope	Time
Bin. in 1	1->0	n/a
Bin. in 2	1->0	n/a
Bin. in 3	0->1	0,036s
Bin. in 4	0->1	0,038s
Bin. in 5	0->1	0,039s
Bin. in 6	0->1	0,036s
Overload	1->0	n/a

Summary

1 tests passed, 0 tests failed, 0 tests not assessed 100,00% passed

Test passed

Group end:3. 87L - Differential Protection

Group:4. Sobrecorrientes

Group:4.1 - Fase

PHASE IOC 1 :

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs: 0,01 s
TimeTolRel: 5,00 %
CurrentTolAbs: 0,01 Iref
CurrentTolRel: 1,50 %
Directional: No

VT connection: n/a
CT starpoint connection: n/a

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Phase TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
Yes	Phase IOC1	IEC Definite Time	1,20 Iref	1,02 s	0,97	Non Directional
No	Phase IOC2	IEC Definite Time	0,20 Iref	0,08 s	0,97	Non Directional
No	Phase IOC3	IEC Definite Time	0,30 Iref	0,03 s	0,97	Non Directional
No	Phase IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neutral TOC1	IEC Curve A (BS142)	0,10 Iref	0,17	0,97	Non Directional
No	Neutral TOC2	IEC Curve A (BS142)	0,20 Iref	0,30	0,97	Non Directional
No	Neutral TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC3	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 FWD	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 FWD	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Ground TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC3	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neg Seq TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neg Seq IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	19-mar.-2019 11:03:23	Test End:	19-mar.-2019 11:04:09
User Name:		Manager:	
Company:			

Test Settings:

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	240,0 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	No
Fault voltage LN (for all but two phase faults):	n/a
Fault voltage LL (for two phase faults):	n/a
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-L2	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2-L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2-L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2-L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3-L1	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3-L1	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3-L1	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2-L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2-L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2-L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s

Binary Inputs:

Trigger Logic: And

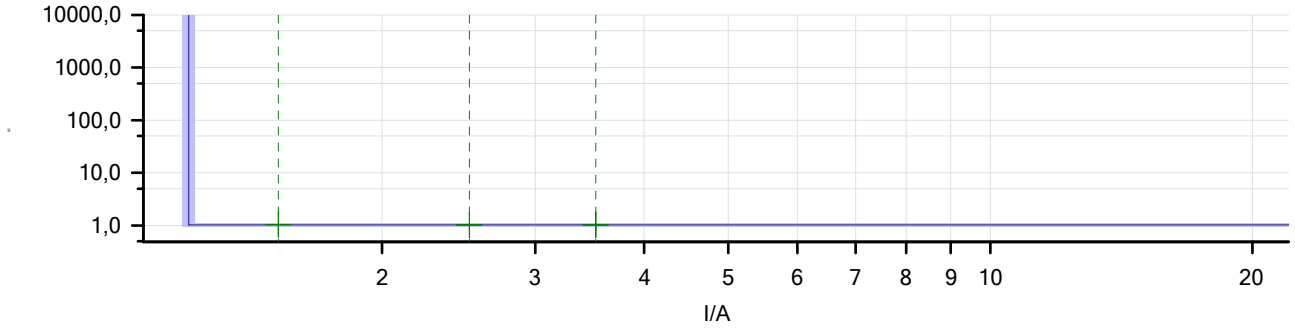
Name	Trigger State
TRIP FA J7 D1	1
TRIP FB J7 D1	1
TRIP FC J7 D1	1
TRIP FA J8 D1	1
TRIP FB J8 D1	1
TRIP FC J8 D1	1
TRIP FA J7 D2	1
TRIP FC J7 D2	1
TRIP FA J8 D2	1
TRIP FC J8 D2	1

Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-L2	Phase IOC1	1,268	1,521 A	n/a	1,025 s	1,034 s	848,8 m %	No	Passed
L1-L2	Phase IOC1	2,101	2,521 A	n/a	1,025 s	1,024 s	-117,1 m %	No	Passed
L1-L2	Phase IOC1	2,934	3,521 A	n/a	1,025 s	1,022 s	-263,4 m %	No	Passed
L2-L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	1,032 s	712,2 m %	No	Passed
L2-L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	1,025 s	-48,78 m %	No	Passed
L2-L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	1,024 s	-107,3 m %	No	Passed
L3-L1	Phase IOC1	1,268	1,521 A	n/a	1,025 s	1,032 s	722,0 m %	No	Passed
L3-L1	Phase IOC1	2,101	2,521 A	n/a	1,025 s	1,026 s	107,3 m %	No	Passed
L3-L1	Phase IOC1	2,934	3,521 A	n/a	1,025 s	1,025 s	-29,27 m %	No	Passed
L1-L2-L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	1,031 s	624,4 m %	No	Passed
L1-L2-L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	1,023 s	-185,4 m %	No	Passed
L1-L2-L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	1,021 s	-409,8 m %	No	Passed
L1	Phase IOC1	1,268	1,521 A	n/a	1,025 s	1,034 s	848,8 m %	No	Passed
L1	Phase IOC1	2,101	2,521 A	n/a	1,025 s	1,024 s	-78,05 m %	No	Passed
L1	Phase IOC1	2,934	3,521 A	n/a	1,025 s	1,022 s	-253,7 m %	No	Passed
L2	Phase IOC1	1,268	1,521 A	n/a	1,025 s	1,032 s	712,2 m %	No	Passed
L2	Phase IOC1	2,101	2,521 A	n/a	1,025 s	1,026 s	97,56 m %	No	Passed
L2	Phase IOC1	2,934	3,521 A	n/a	1,025 s	1,023 s	-234,1 m %	No	Passed
L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	1,033 s	741,5 m %	No	Passed
L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	1,026 s	58,54 m %	No	Passed
L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	1,024 s	-58,54 m %	No	Passed

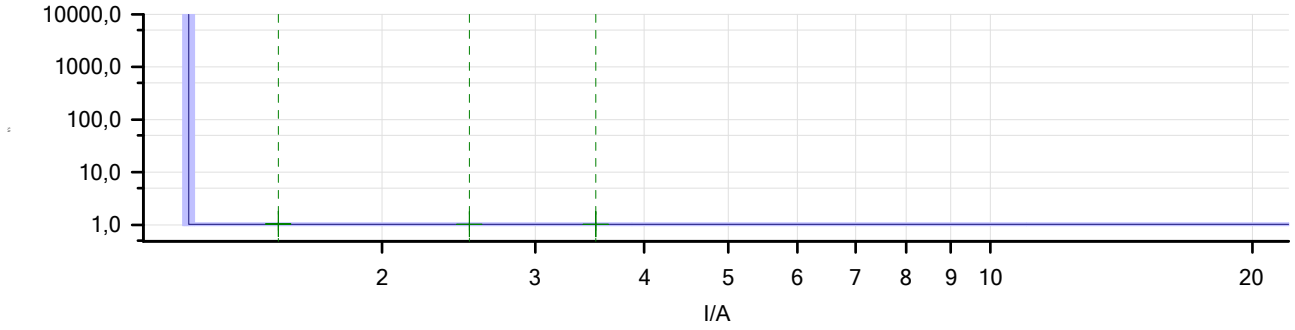
Charts for Fault Types:

Type	Angle
L1-L2	n/a



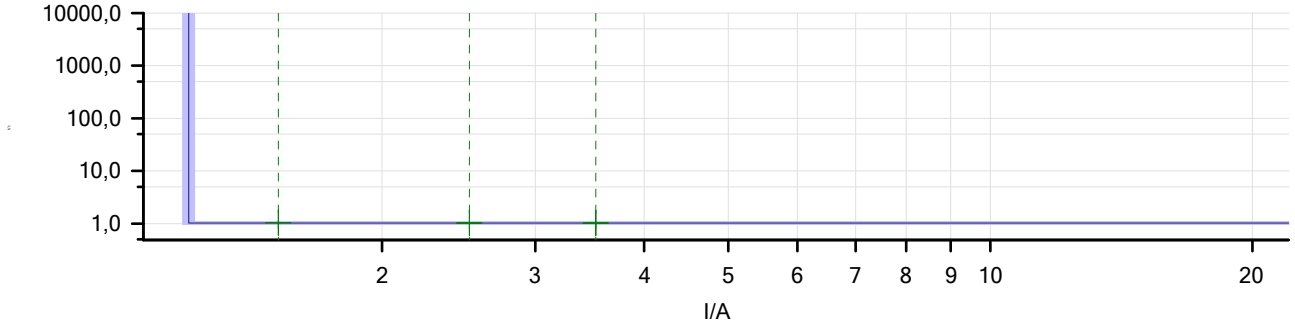
Charts for Fault Types:

Type	Angle
L2-L3	n/a



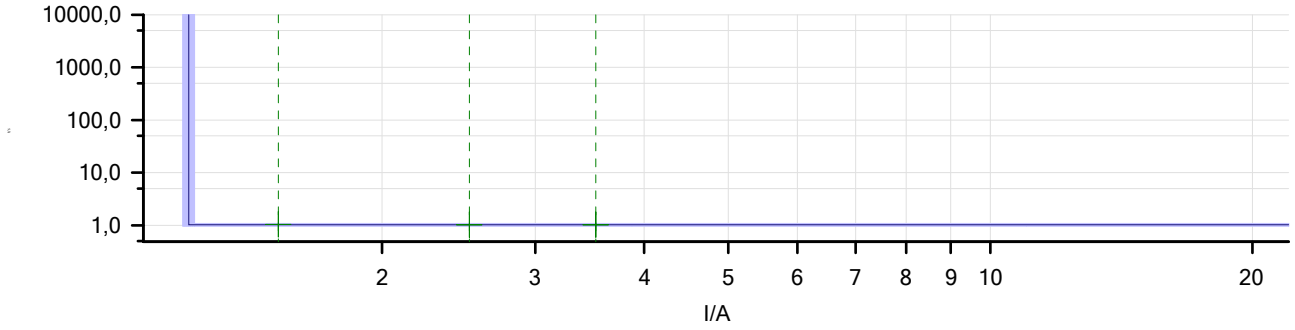
Charts for Fault Types:

Type	Angle
L3-L1	n/a



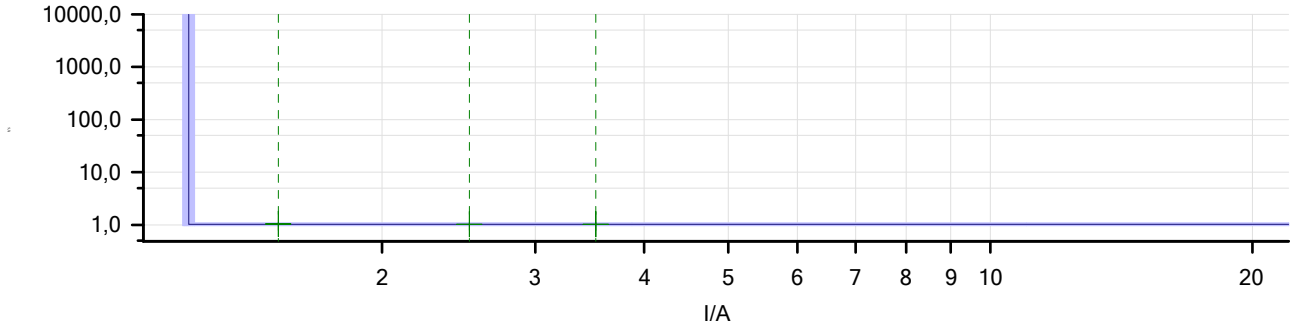
Charts for Fault Types:

Type	Angle
L1-L2-L3	n/a



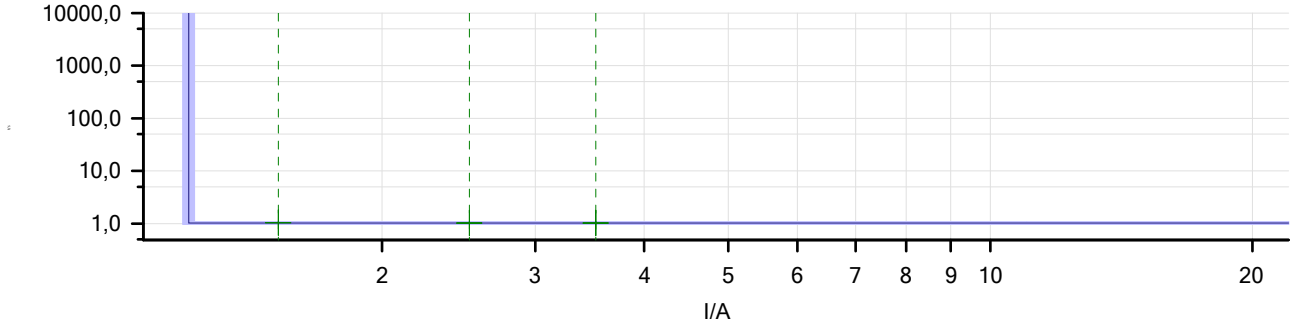
Charts for Fault Types:

Type	Angle
L1	n/a



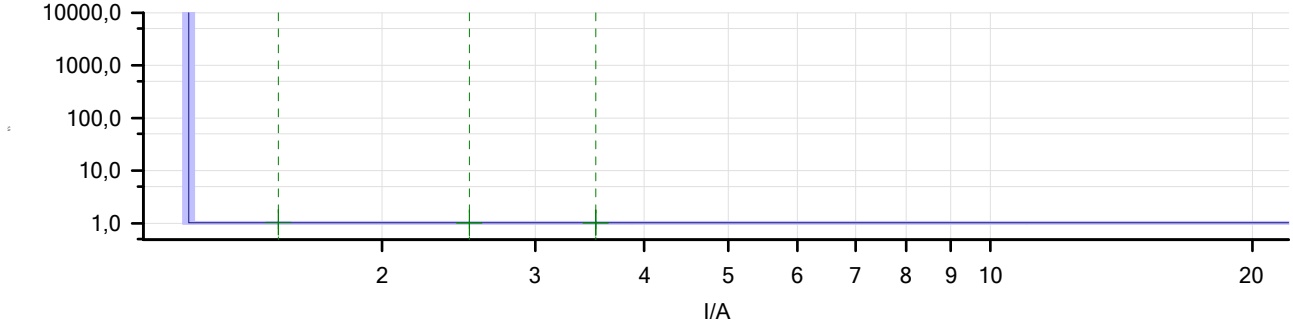
Charts for Fault Types:

Type	Angle
L2	n/a



Charts for Fault Types:

Type	Angle
L3	n/a



State:

21 out of 21 points tested.
21 points passed.
0 points failed.

General Assessment: Test passed!

PHASE IOC 1 BLK X EMERG.:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,01 s	VT connection:	n/a
TimeTolRel:	5,00 %	CT starpoint connection:	n/a
CurrentTolAbs:	0,01 Iref		
CurrentTolRel:	1,50 %		
Directional:	No		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Phase TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
Yes	Phase IOC1	IEC Definite Time	1,20 Iref	1,02 s	0,97	Non Directional
No	Phase IOC2	IEC Definite Time	0,20 Iref	0,08 s	0,97	Non Directional
No	Phase IOC3	IEC Definite Time	0,30 Iref	0,03 s	0,97	Non Directional
No	Phase IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neutral TOC1	IEC Curve A (BS142)	0,10 Iref	0,17	0,97	Non Directional
No	Neutral TOC2	IEC Curve A (BS142)	0,20 Iref	0,30	0,97	Non Directional
No	Neutral TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC3	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 FWD	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 FWD	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Ground TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC3	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neg Seq TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neg Seq IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	19-mar.-2019 11:27:10	Test End:	19-mar.-2019 11:28:29
User Name:		Manager:	
Company:			

Test Settings:

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	240,0 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	No
Fault voltage LN (for all but two phase faults):	n/a
Fault voltage LL (for two phase faults):	n/a
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-L2	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2-L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2-L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2-L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3-L1	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3-L1	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3-L1	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2-L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2-L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1-L2-L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L1	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L2	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	973,8 ms	1,076 s
L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	973,8 ms	1,076 s

Binary Inputs:

Trigger Logic: And

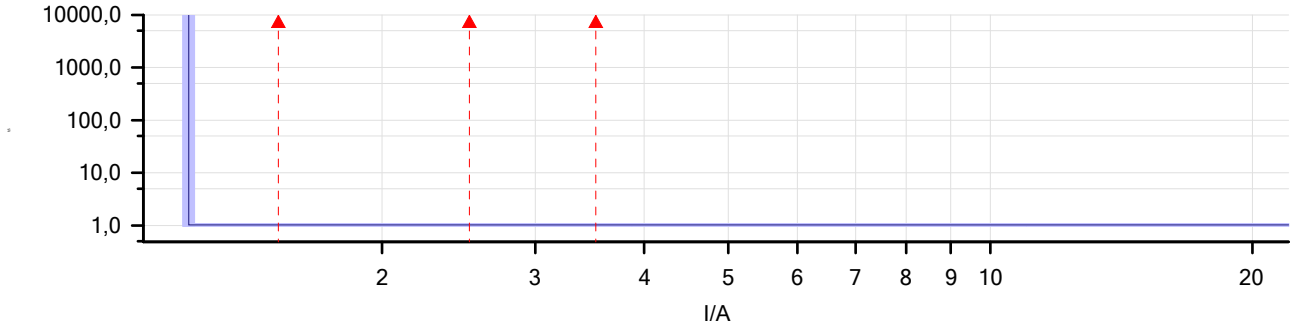
Name	Trigger State
TRIP FA J7 D1	1
TRIP FB J7 D1	1
TRIP FC J7 D1	1
TRIP FA J8 D1	1
TRIP FB J8 D1	1
TRIP FC J8 D1	1
TRIP FA J7 D2	1
TRIP FC J7 D2	1
TRIP FA J8 D2	1
TRIP FC J8 D2	1

Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-L2	Phase IOC1	1,268	1,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L1-L2	Phase IOC1	2,101	2,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L1-L2	Phase IOC1	2,934	3,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L2-L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L2-L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L2-L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L3-L1	Phase IOC1	1,268	1,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L3-L1	Phase IOC1	2,101	2,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L3-L1	Phase IOC1	2,934	3,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L1-L2-L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L1-L2-L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L1-L2-L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L1	Phase IOC1	1,268	1,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L1	Phase IOC1	2,101	2,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L1	Phase IOC1	2,934	3,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L2	Phase IOC1	1,268	1,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L2	Phase IOC1	2,101	2,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L2	Phase IOC1	2,934	3,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L3	Phase IOC1	1,268	1,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L3	Phase IOC1	2,101	2,521 A	n/a	1,025 s	No trip	n/a	No	Failed
L3	Phase IOC1	2,934	3,521 A	n/a	1,025 s	No trip	n/a	No	Failed

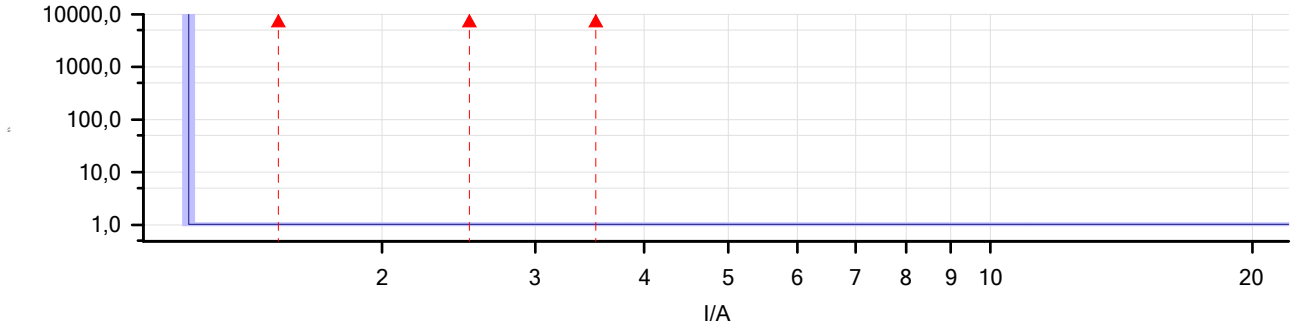
Charts for Fault Types:

Type	Angle
L1-L2	n/a



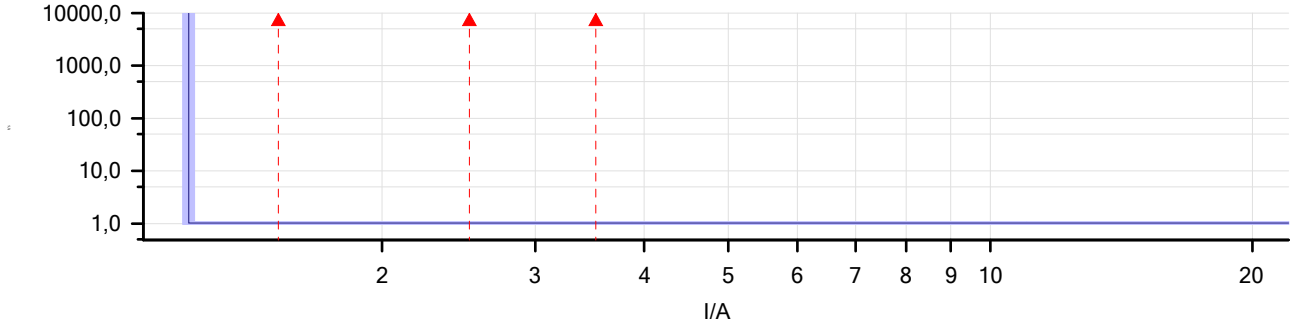
Charts for Fault Types:

Type	Angle
L2-L3	n/a



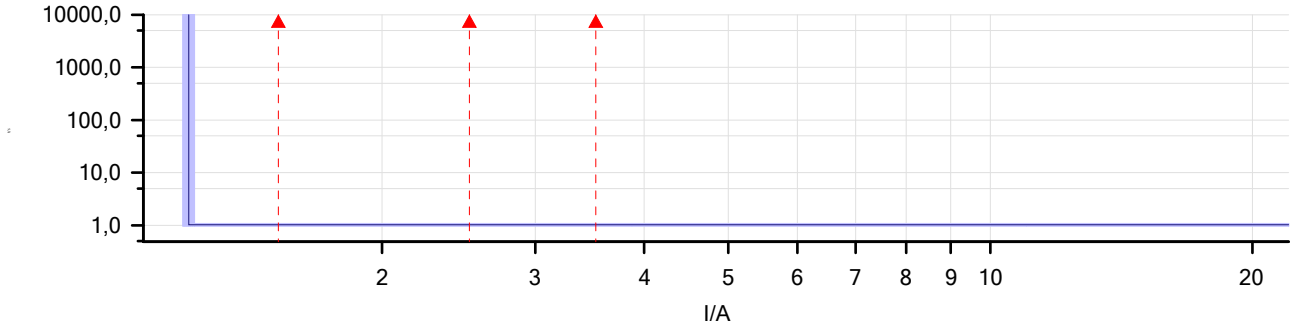
Charts for Fault Types:

Type	Angle
L3-L1	n/a



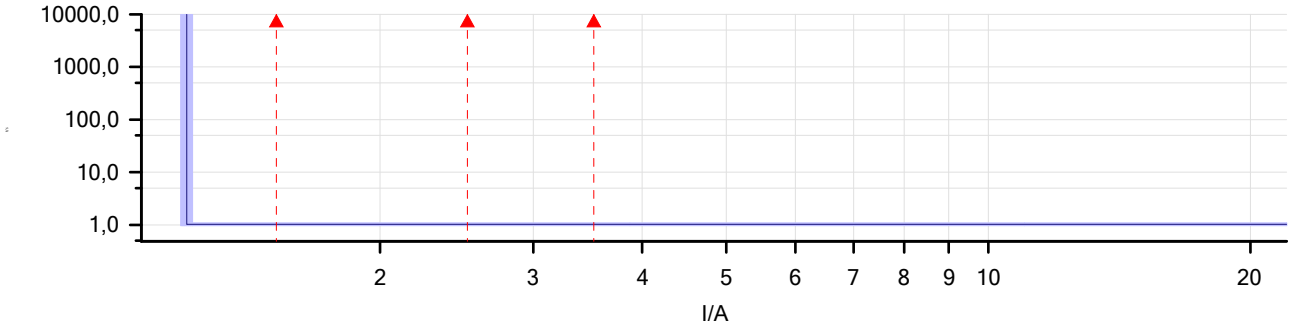
Charts for Fault Types:

Type	Angle
L1-L2-L3	n/a



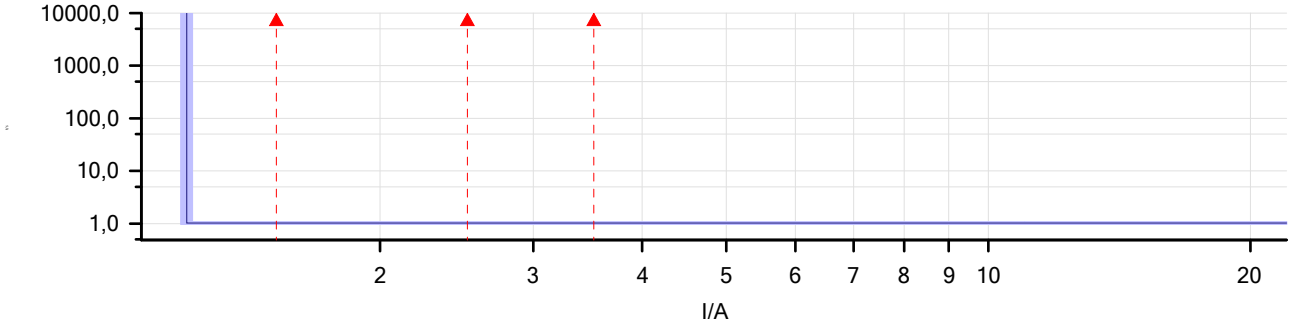
Charts for Fault Types:

Type	Angle
L1	n/a



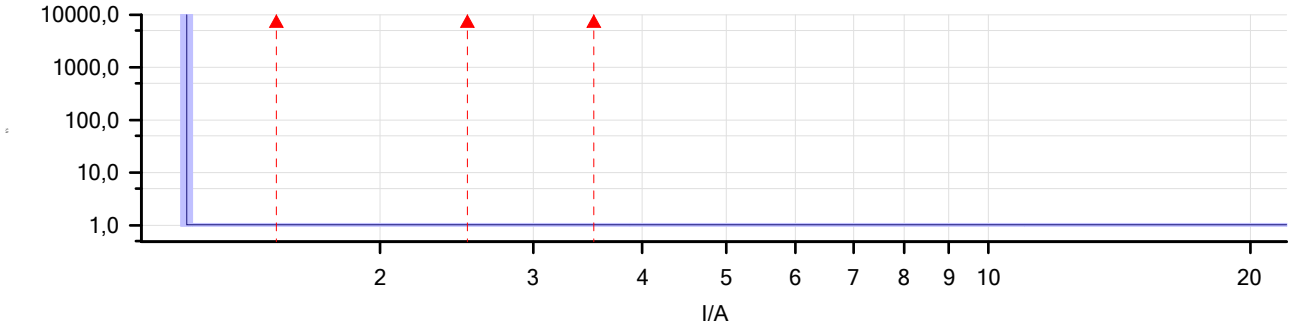
Charts for Fault Types:

Type	Angle
L2	n/a



Charts for Fault Types:

Type	Angle
L3	n/a



State:

21 out of 21 points tested.
0 points passed.
21 points failed.

General Assessment: Test passed! (manually assessed!)

Group end:4.1 - Fase

Group:4.2 - Neutro y 67N

NEUTRAL TOC 2:
Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,01 s	VT connection:	n/a
TimeTolRel:	5,00 %	CT starpoint connection:	n/a
CurrentTolAbs:	0,01 Iref		
CurrentTolRel:	1,50 %		
Directional:	No		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Phase TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase IOC1	IEC Definite Time	1,20 Iref	1,02 s	0,97	Non Directional
No	Phase IOC2	IEC Definite Time	0,20 Iref	0,08 s	0,97	Non Directional
No	Phase IOC3	IEC Definite Time	0,30 Iref	0,03 s	0,97	Non Directional
No	Phase IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neutral TOC1	IEC Curve A (BS142)	0,10 Iref	0,17	0,97	Non Directional
Yes	Neutral TOC2	IEC Curve A (BS142)	0,20 Iref	0,30	0,97	Non Directional
No	Neutral TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC3	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 FWD	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 FWD	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Ground TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC3	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neg Seq TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neg Seq IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	19-mar.-2019 11:57:33	Test End:	19-mar.-2019 11:58:25
User Name:		Manager:	
Company:			

Test Settings:

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	240,0 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	No
Fault voltage LN (for all but two phase faults):	n/a
Fault voltage LL (for two phase faults):	n/a
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	5,958 s	8,477 s
L1-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,098 s	3,743 s
L1-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,263 s	2,631 s
L2-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	5,958 s	8,477 s
L2-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,098 s	3,743 s
L2-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,263 s	2,631 s
L3-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	5,958 s	8,477 s
L3-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,098 s	3,743 s
L3-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,263 s	2,631 s

Binary Inputs:

Trigger Logic: And

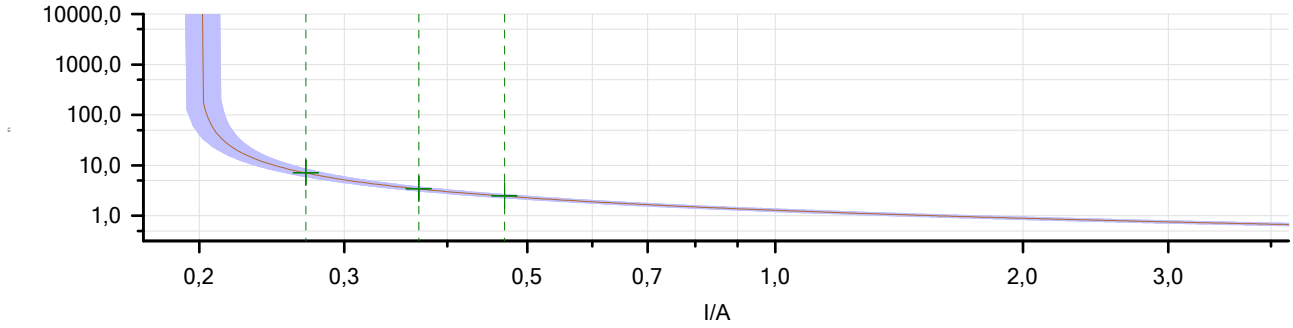
Name	Trigger State
TRIP FA J7 D1	1
TRIP FB J7 D1	1
TRIP FC J7 D1	1
TRIP FA J8 D1	1
TRIP FB J8 D1	1
TRIP FC J8 D1	1
TRIP FA J7 D2	1
TRIP FC J7 D2	1
TRIP FA J8 D2	1
TRIP FC J8 D2	1

Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	7,132 s	1,258 %	No	Passed
L1-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,442 s	1,107 %	No	Passed
L1-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,478 s	1,509 %	No	Passed
L2-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	7,163 s	1,698 %	No	Passed
L2-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,436 s	925,2 m %	No	Passed
L2-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,482 s	1,636 %	No	Passed
L3-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	7,168 s	1,775 %	No	Passed
L3-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,444 s	1,169 %	No	Passed
L3-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,472 s	1,247 %	No	Passed

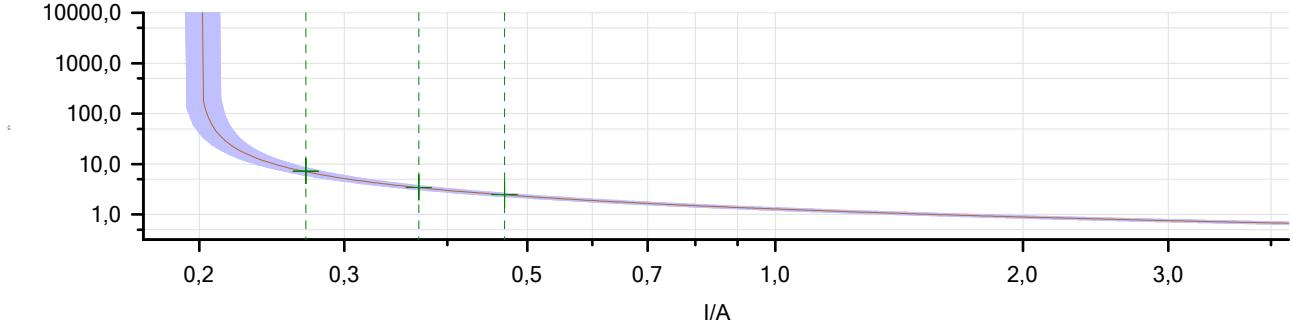
Charts for Fault Types:

Type	Angle
L1-E	n/a



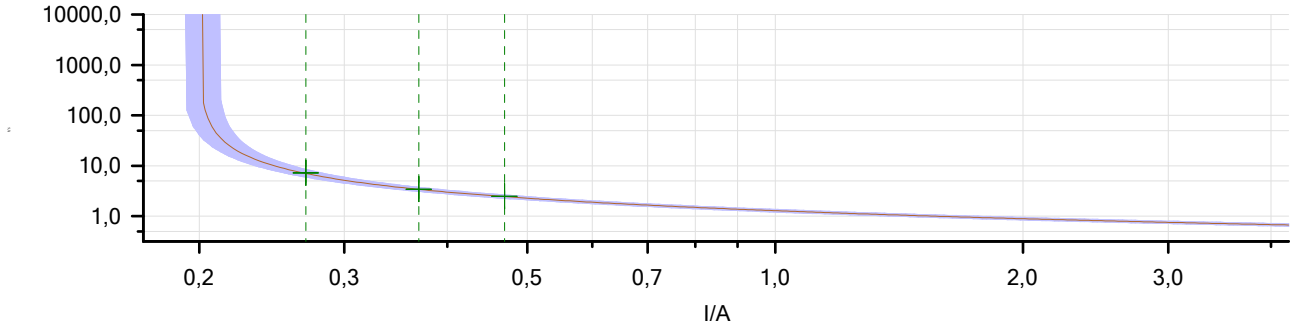
Charts for Fault Types:

Type	Angle
L2-E	n/a



Charts for Fault Types:

Type	Angle
L3-E	n/a



State:

9 out of 9 points tested.
9 points passed.
0 points failed.

General Assessment: Test passed!

NEUTRAL TOC 2 BLK X EMERG.:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,01 s	VT connection:	n/a
TimeTolRel:	5,00 %	CT starpoint connection:	n/a
CurrentTolAbs:	0,01 Iref		
CurrentTolRel:	1,50 %		
Directional:	No		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Phase TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase IOC1	IEC Definite Time	1,20 Iref	1,02 s	0,97	Non Directional
No	Phase IOC2	IEC Definite Time	0,20 Iref	0,08 s	0,97	Non Directional
No	Phase IOC3	IEC Definite Time	0,30 Iref	0,03 s	0,97	Non Directional
No	Phase IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neutral TOC1	IEC Curve A (BS142)	0,10 Iref	0,17	0,97	Non Directional
Yes	Neutral TOC2	IEC Curve A (BS142)	0,20 Iref	0,30	0,97	Non Directional
No	Neutral TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC3	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 FWD	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 FWD	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Ground TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC3	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neg Seq TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neg Seq IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	19-mar.-2019 12:02:09	Test End:	19-mar.-2019 12:03:55
User Name:		Manager:	
Company:			

Test Settings:

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	240,0 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	No
Fault voltage LN (for all but two phase faults):	n/a
Fault voltage LL (for two phase faults):	n/a
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	5,958 s	8,477 s
L1-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,098 s	3,743 s
L1-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,263 s	2,631 s
L2-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	5,958 s	8,477 s
L2-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,098 s	3,743 s
L2-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,263 s	2,631 s
L3-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	5,958 s	8,477 s
L3-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	3,098 s	3,743 s
L3-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	2,263 s	2,631 s

Binary Inputs:

Trigger Logic: And

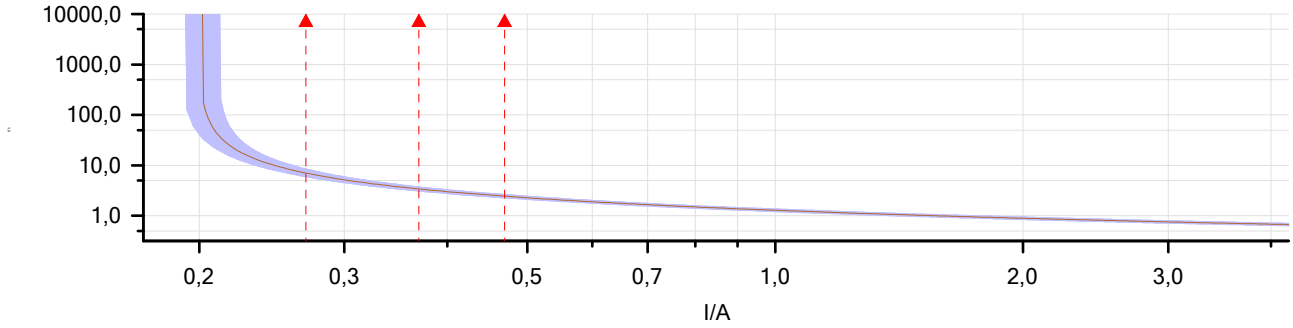
Name	Trigger State
TRIP FA J7 D1	1
TRIP FB J7 D1	1
TRIP FC J7 D1	1
TRIP FA J8 D1	1
TRIP FB J8 D1	1
TRIP FC J8 D1	1
TRIP FA J7 D2	1
TRIP FC J7 D2	1
TRIP FA J8 D2	1
TRIP FC J8 D2	1

Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	No trip	n/a	No	Failed
L1-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	No trip	n/a	No	Failed
L1-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	No trip	n/a	No	Failed
L2-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	No trip	n/a	No	Failed
L2-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	No trip	n/a	No	Failed
L2-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	No trip	n/a	No	Failed
L3-E	Neutral TOC2	1,346	269,2 m A	n/a	7,043 s	No trip	n/a	No	Failed
L3-E	Neutral TOC2	1,846	369,2 m A	n/a	3,404 s	No trip	n/a	No	Failed
L3-E	Neutral TOC2	2,346	469,2 m A	n/a	2,442 s	No trip	n/a	No	Failed

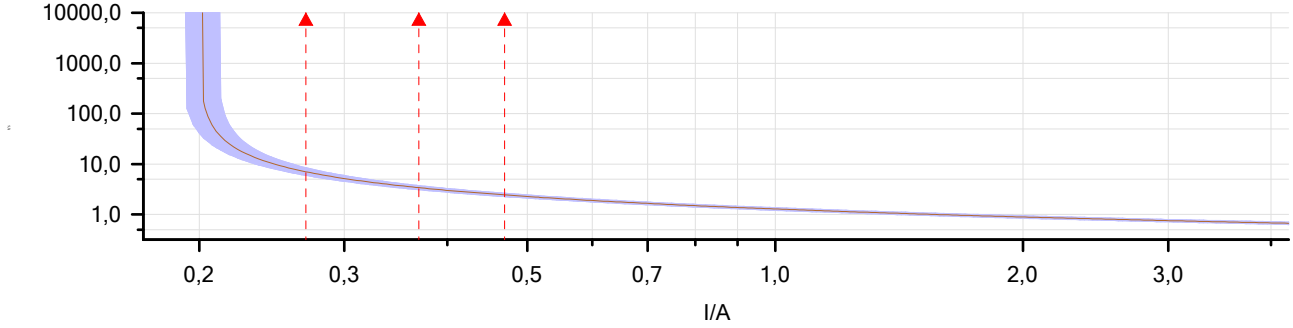
Charts for Fault Types:

Type	Angle
L1-E	n/a



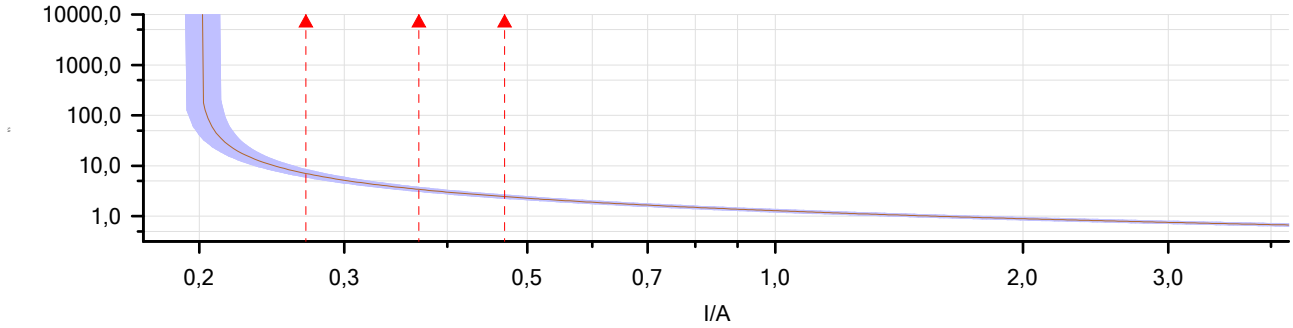
Charts for Fault Types:

Type	Angle
L2-E	n/a



Charts for Fault Types:

Type	Angle
L3-E	n/a



State:

9 out of 9 points tested.
0 points passed.
9 points failed.

General Assessment: Test passed! (manually assessed!)

N E U T R A L T O C 1 C U R V . O C D I R .:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,01 s	VT connection:	At protected object
TimeTolRel:	5,00 %	CT starpoint connection:	To protected object
CurrentTolAbs:	0,01 Iref		
CurrentTolRel:	1,50 %		
Directional:	Yes		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Phase TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase IOC1	IEC Definite Time	1,20 Iref	1,02 s	0,97	Non Directional
No	Phase IOC2	IEC Definite Time	0,20 Iref	0,08 s	0,97	Non Directional
No	Phase IOC3	IEC Definite Time	0,30 Iref	0,03 s	0,97	Non Directional
No	Phase IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	Neutral TOC1	IEC Curve A (BS142)	0,10 Iref	0,17	0,97	Forward
No	Neutral TOC2	IEC Curve A (BS142)	0,20 Iref	0,30	0,97	Non Directional
No	Neutral TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC3	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 FWD	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 FWD	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Ground TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC3	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neg Seq TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neg Seq IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	19-mar.-2019 12:21:12	Test End:	19-mar.-2019 12:21:36
User Name:		Manager:	
Company:			

T e s t S e t t i n g s :

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	240,0 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	Yes
Fault voltage LN (for all but two phase faults):	30,00 V
Fault voltage LL (for two phase faults):	51,96 V
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	Neutral TOC1	1,979	197,9 m A	-60,00 °	1,731 s	1,533 s	1,968 s
L1-E	Neutral TOC1	3,479	347,9 m A	-60,00 °	942,5 ms	875,3 ms	1,014 s
L1-E	Neutral TOC1	4,979	497,9 m A	-60,00 °	729,5 ms	684,4 ms	775,9 ms
L2-E	Neutral TOC1	1,979	197,9 m A	-60,00 °	1,731 s	1,533 s	1,968 s
L2-E	Neutral TOC1	3,479	347,9 m A	-60,00 °	942,5 ms	875,3 ms	1,014 s
L2-E	Neutral TOC1	4,979	497,9 m A	-60,00 °	729,5 ms	684,4 ms	775,9 ms
L3-E	Neutral TOC1	1,979	197,9 m A	-60,00 °	1,731 s	1,533 s	1,968 s
L3-E	Neutral TOC1	3,479	347,9 m A	-60,00 °	942,5 ms	875,3 ms	1,014 s
L3-E	Neutral TOC1	4,979	497,9 m A	-60,00 °	729,5 ms	684,4 ms	775,9 ms

Binary Inputs:

Trigger Logic: And

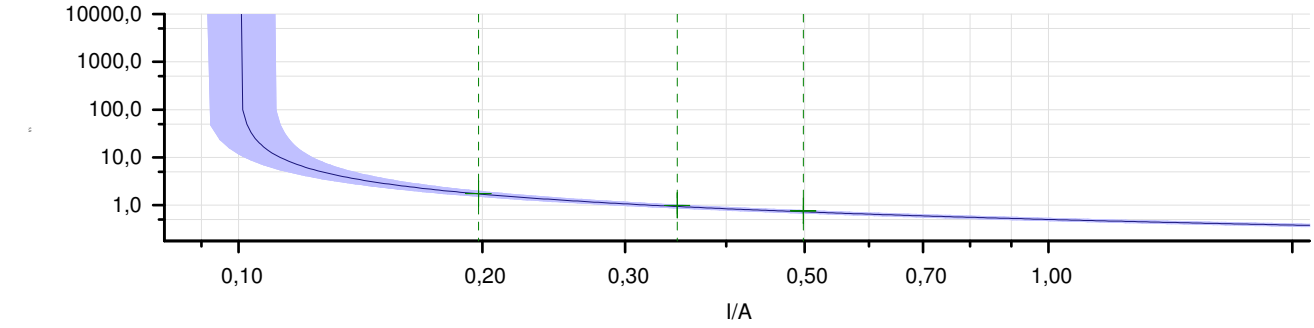
Name	Trigger State
TRIP FA J7 D1	1
TRIP FB J7 D1	1
TRIP FC J7 D1	1
TRIP FA J8 D1	1
TRIP FB J8 D1	1
TRIP FC J8 D1	1
TRIP FA J7 D2	1
TRIP FC J7 D2	1
TRIP FA J8 D2	1
TRIP FC J8 D2	1

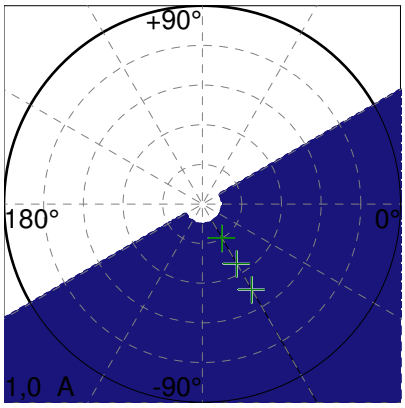
Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	Neutral TOC1	1,979	197,9 m A	-60,00 °	1,731 s	1,767 s	2,082 %	No	Passed
L1-E	Neutral TOC1	3,479	347,9 m A	-60,00 °	942,5 ms	985,0 ms	4,504 %	No	Passed
L1-E	Neutral TOC1	4,979	497,9 m A	-60,00 °	729,5 ms	766,9 ms	5,133 %	No	Passed
L2-E	Neutral TOC1	1,979	197,9 m A	-60,00 °	1,731 s	1,785 s	3,116 %	No	Passed
L2-E	Neutral TOC1	3,479	347,9 m A	-60,00 °	942,5 ms	980,6 ms	4,037 %	No	Passed
L2-E	Neutral TOC1	4,979	497,9 m A	-60,00 °	729,5 ms	764,5 ms	4,804 %	No	Passed
L3-E	Neutral TOC1	1,979	197,9 m A	-60,00 °	1,731 s	1,775 s	2,526 %	No	Passed
L3-E	Neutral TOC1	3,479	347,9 m A	-60,00 °	942,5 ms	981,4 ms	4,122 %	No	Passed
L3-E	Neutral TOC1	4,979	497,9 m A	-60,00 °	729,5 ms	765,3 ms	4,914 %	No	Passed

Charts for Fault Types:

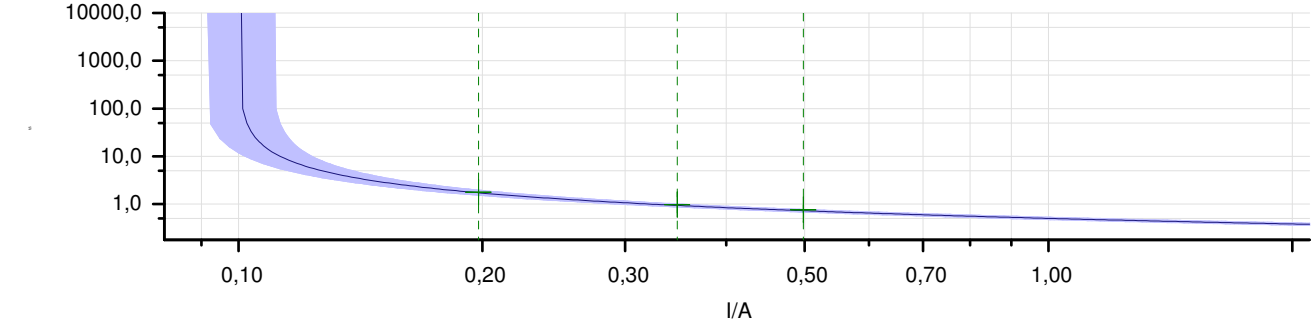
Type	Angle
L1-E	-60,00 °

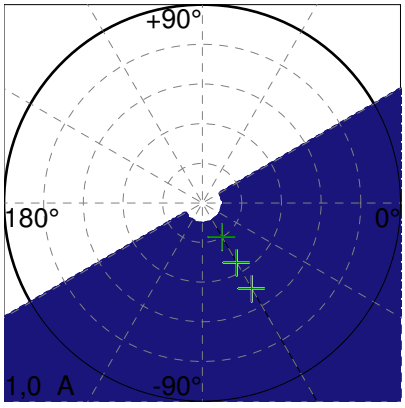




Charts for Fault Types:

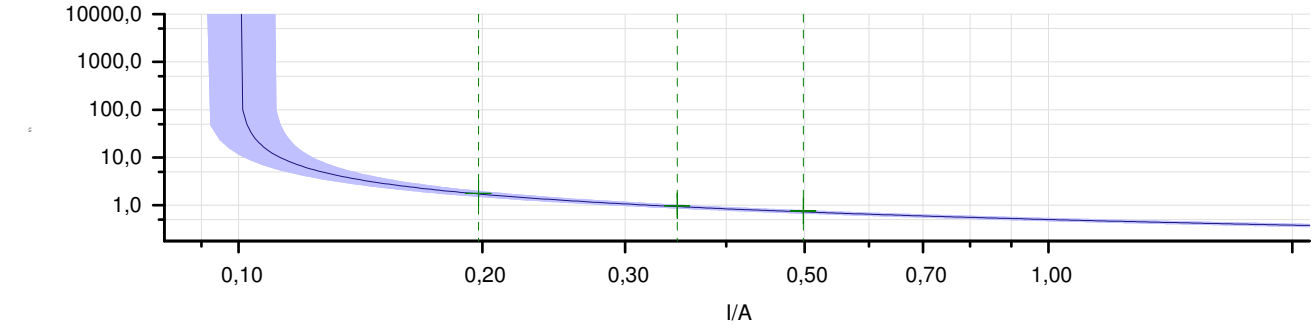
Type	Angle
L2-E	-60,00 °

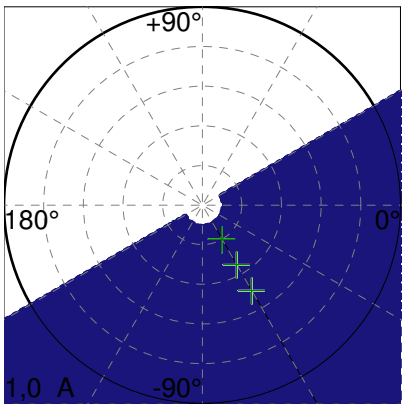




Charts for Fault Types:

Type	Angle
L3-E	-60,00 °





State:

9 out of 9 points tested.
9 points passed.
0 points failed.

General Assessment: Test passed!

NEUTRAL TOC 1 ANG. OC DIR.:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,01 s	VT connection:	At protected object
TimeTolRel:	5,00 %	CT starpoint connection:	To protected object
CurrentTolAbs:	0,01 Iref		
CurrentTolRel:	1,50 %		
Directional:	Yes		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Phase TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase IOC1	IEC Definite Time	1,20 Iref	1,02 s	0,97	Non Directional
No	Phase IOC2	IEC Definite Time	0,20 Iref	0,08 s	0,97	Non Directional
No	Phase IOC3	IEC Definite Time	0,30 Iref	0,03 s	0,97	Non Directional
No	Phase IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	Neutral TOC1	IEC Curve A (BS142)	0,10 Iref	0,17	0,97	Forward
No	Neutral TOC2	IEC Curve A (BS142)	0,20 Iref	0,30	0,97	Non Directional
No	Neutral TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC3	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 FWD	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 FWD	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Ground TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC3	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neg Seq TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neg Seq IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Test Module

Name:	OMICRON Overcurrent	Version:	3.20
Test Start:	19-mar.-2019 12:27:18	Test End:	19-mar.-2019 12:28:16
User Name:		Manager:	
Company:			

T e s t S e t t i n g s :

Fault Model:

Time reference:	Fault inception
Load current:	0,000 A
Load angle:	n/a
Prefault time:	100,0 ms
Abs. max time:	15,00 s
Post fault time:	500,0 ms
Rel. max time:	100,0 %
Enable voltage output:	Yes
Fault voltage LN (for all but two phase faults):	30,00 V
Fault voltage LL (for two phase faults):	51,96 V
Decaying DC active:	No
Time constant:	n/a
CB char min time:	50,00 ms
Thermal reset active:	No
Thermal reset method:	n/a
Thermal reset message:	n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	Neutral TOC1	3,114	311,4 m A	10,00 °	1,036 s	957,1 ms	1,120 s
L1-E	Neutral TOC1	3,114	311,4 m A	50,00 °	No trip	No trip	No trip
L2-E	Neutral TOC1	3,114	311,4 m A	10,00 °	1,036 s	957,1 ms	1,120 s
L2-E	Neutral TOC1	3,114	311,4 m A	50,00 °	No trip	No trip	No trip
L3-E	Neutral TOC1	3,114	311,4 m A	10,00 °	1,036 s	957,1 ms	1,120 s
L3-E	Neutral TOC1	3,114	311,4 m A	50,00 °	No trip	No trip	No trip

Binary Inputs:

Trigger Logic: And

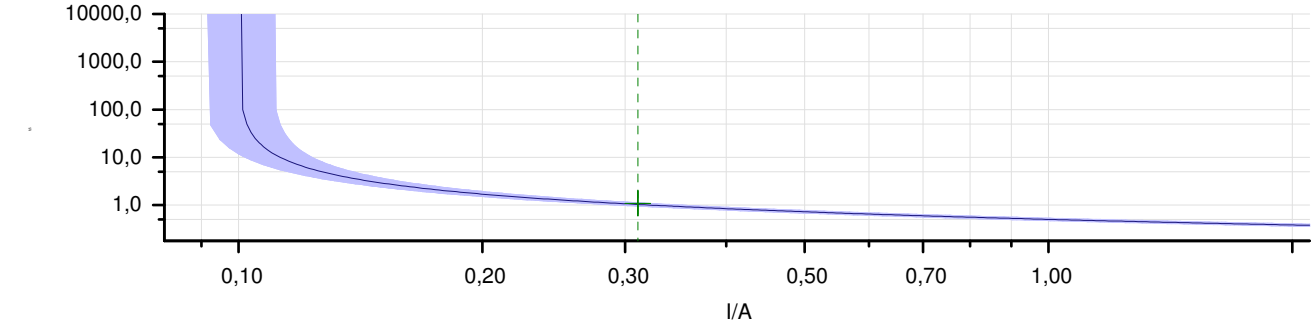
Name	Trigger State
TRIP FA J7 D1	1
TRIP FB J7 D1	1
TRIP FC J7 D1	1
TRIP FA J8 D1	1
TRIP FB J8 D1	1
TRIP FC J8 D1	1
TRIP FA J7 D2	1
TRIP FC J7 D2	1
TRIP FA J8 D2	1
TRIP FC J8 D2	1

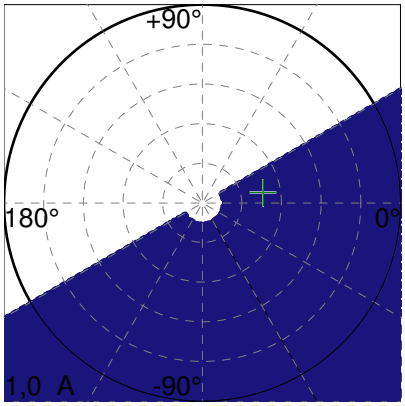
Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	Neutral TOC1	3,114	311,4 m A	10,00 °	1,036 s	1,086 s	4,844 %	No	Passed
L1-E	Neutral TOC1	3,114	311,4 m A	50,00 °	No trip	No trip	n/a	No	Passed
L2-E	Neutral TOC1	3,114	311,4 m A	10,00 °	1,036 s	1,081 s	4,361 %	No	Passed
L2-E	Neutral TOC1	3,114	311,4 m A	50,00 °	No trip	No trip	n/a	No	Passed
L3-E	Neutral TOC1	3,114	311,4 m A	10,00 °	1,036 s	1,080 s	4,303 %	No	Passed
L3-E	Neutral TOC1	3,114	311,4 m A	50,00 °	No trip	No trip	n/a	No	Passed

Charts for Fault Types:

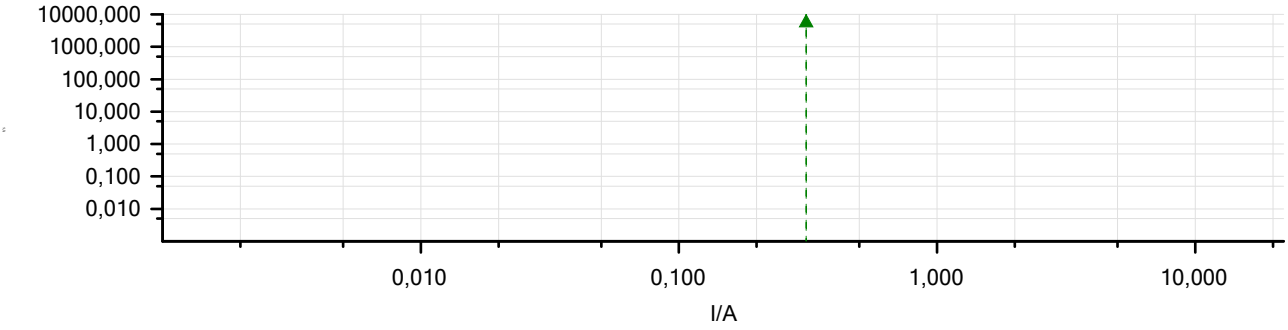
Type	Angle
L1-E	10,00 °

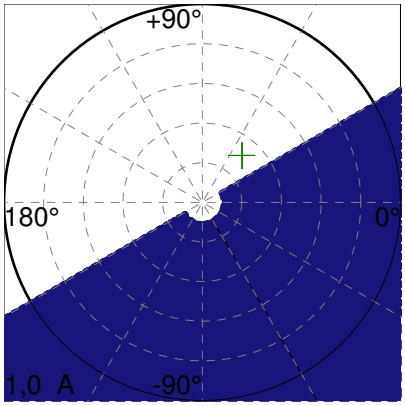




Charts for Fault Types:

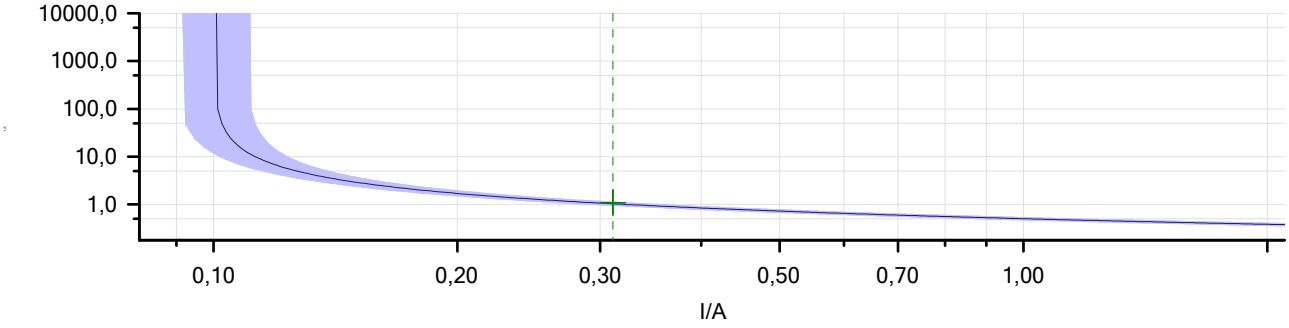
Type	Angle
L1-E	50,00 °

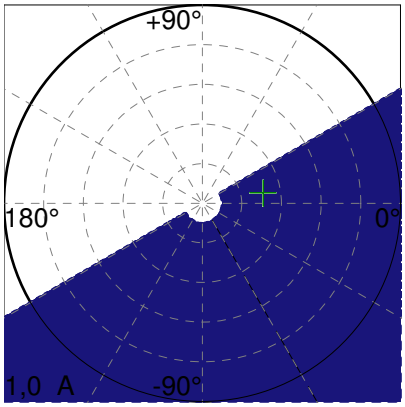




Charts for Fault Types:

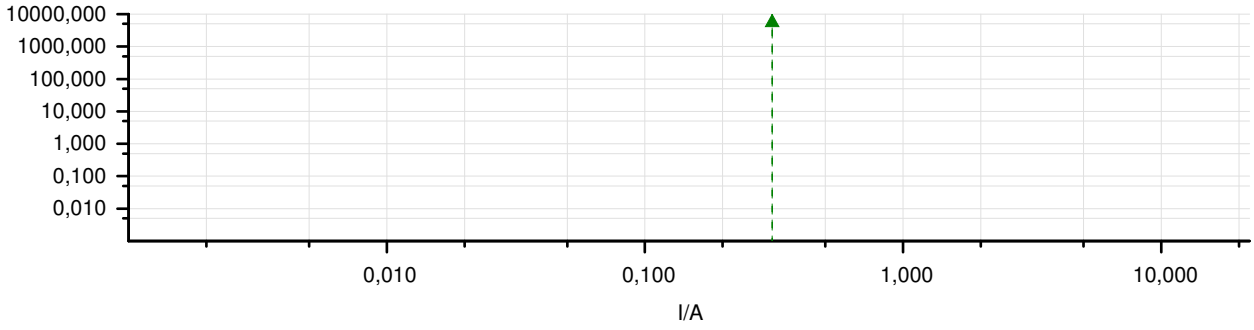
Type	Angle
L2-E	10,00 °

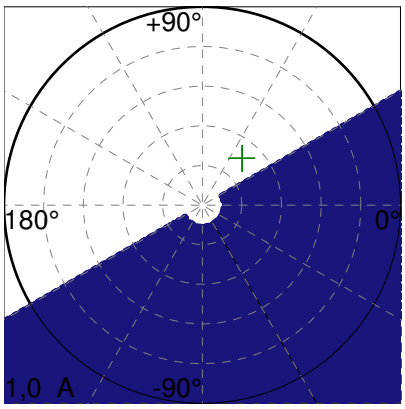




Charts for Fault Types:

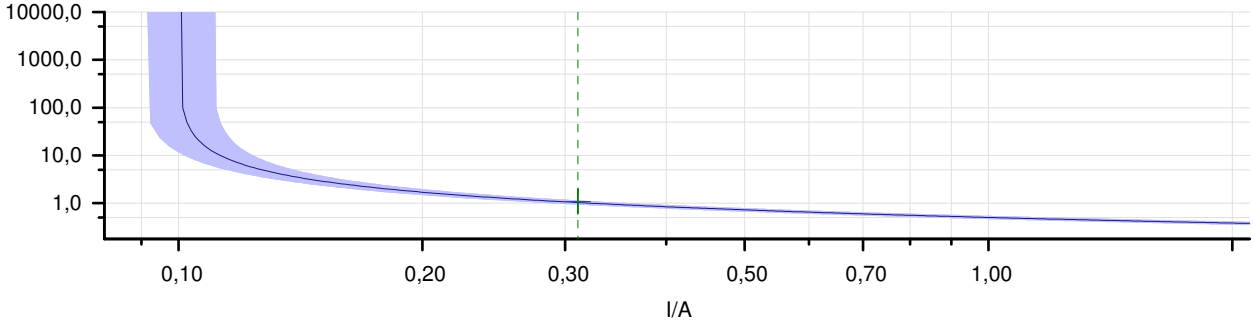
Type	Angle
L2-E	50,00 °

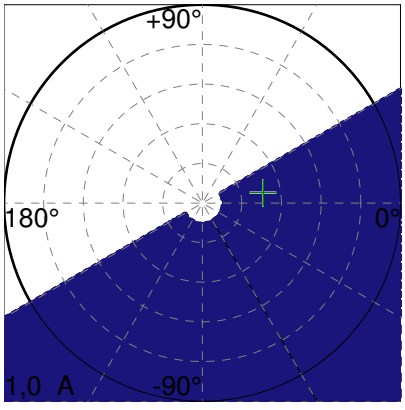




Charts for Fault Types:

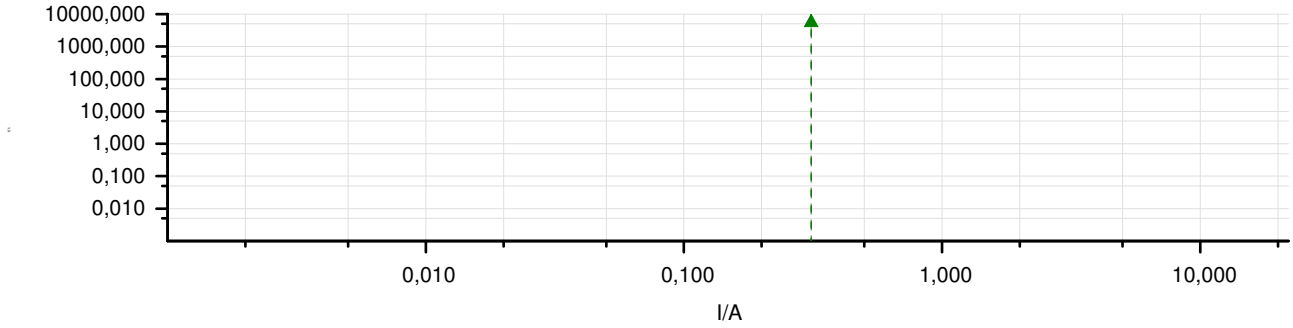
Type	Angle
L3-E	10,00 °

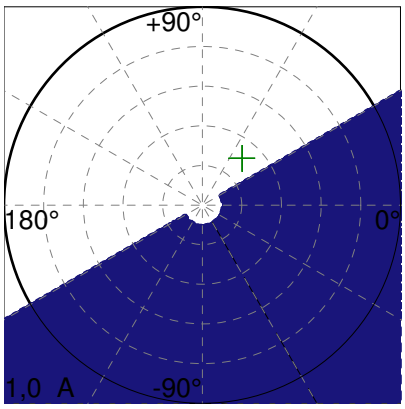




Charts for Fault Types:

Type	Angle
L3-E	50,00 °





State:

6 out of 6 points tested.
6 points passed.
0 points failed.

General Assessment: Test passed!

NEUTRAL TOC 1 BLK X FALLA TP:

Test Object - Overcurrent Parameters

General - Values:

TimeTolAbs:	0,01 s	VT connection:	At protected object
TimeTolRel:	5,00 %	CT starpoint connection:	To protected object
CurrentTolAbs:	0,01 Iref		
CurrentTolRel:	1,50 %		
Directional:	Yes		

Elements - Phase:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Phase TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Phase IOC1	IEC Definite Time	1,20 Iref	1,02 s	0,97	Non Directional
No	Phase IOC2	IEC Definite Time	0,20 Iref	0,08 s	0,97	Non Directional
No	Phase IOC3	IEC Definite Time	0,30 Iref	0,03 s	0,97	Non Directional
No	Phase IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Phase IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Residual:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
Yes	Neutral TOC1	IEC Curve A (BS142)	0,10 Iref	0,17	0,97	Forward
No	Neutral TOC2	IEC Curve A (BS142)	0,20 Iref	0,30	0,97	Non Directional
No	Neutral TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neutral IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC3	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 FWD	IEC Definite Time	0,10 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC1 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 FWD	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Neutral/Ground DIR OC2 REV	IEC Definite Time	0,05 Iref	0,03 s	0,97	Non Directional
No	Ground TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC3	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC4	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC5	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground TOC6	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Ground IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC3	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC4	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC5	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC6	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC7	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Ground IOC8	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Elements - Negative Sequence:

Active	Name	Tripping characteristic	I Pick-up	Time	Reset Ratio	Direction
No	Neg Seq TOC1	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq TOC2	IEEE Mod Inv	1,00 Iref	1,00	0,97	Non Directional
No	Neg Seq IOC1	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional
No	Neg Seq IOC2	IEC Definite Time	1,00 Iref	0,03 s	0,97	Non Directional

Test Module

Name: OMICRON Overcurrent
Version: 3.20
Test Start: 19-mar.-2019 12:42:47
Test End: 19-mar.-2019 12:42:59
User Name:
Manager:
Company:

T e s t S e t t i n g s :

Fault Model:

Time reference: Fault inception
Load current: 0,000 A
Load angle: n/a
Prefault time: 100,0 ms
Abs. max time: 15,00 s
Post fault time: 500,0 ms
Rel. max time: 100,0 %
Enable voltage output: Yes
Fault voltage LN (for all but two phase faults): 30,00 V
Fault voltage LL (for two phase faults): 51,96 V
Decaying DC active: No
Time constant: n/a
CB char min time: 50,00 ms
Thermal reset active: No
Thermal reset method: n/a
Thermal reset message: n/a

Shot Test:

Type	Relative To	Factor	Magnitude	Angle	tnom	tmin	tmax
L1-E	Neutral TOC1	4,194	419,4 m A	-60,00 °	818,2 ms	764,5 ms	874,0 ms
L2-E	Neutral TOC1	4,194	419,4 m A	-60,00 °	818,2 ms	764,5 ms	874,0 ms
L3-E	Neutral TOC1	4,194	419,4 m A	-60,00 °	818,2 ms	764,5 ms	874,0 ms

Binary Inputs:

Trigger Logic: And

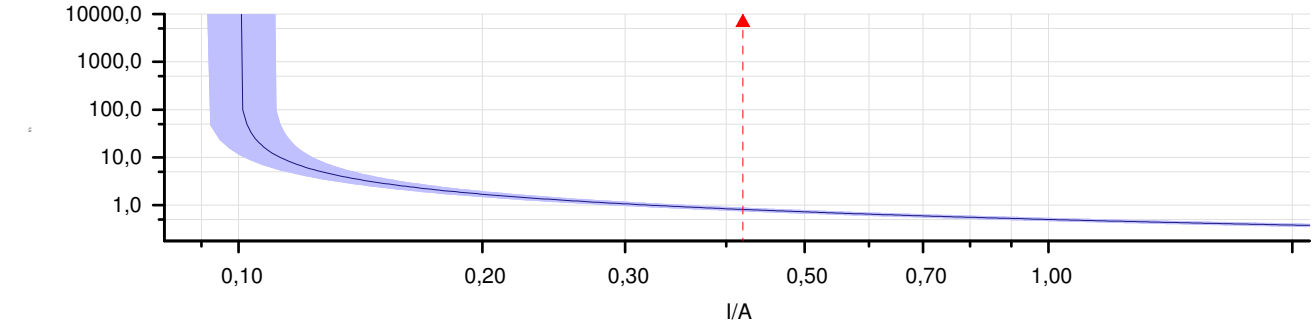
Name	Trigger State
TRIP FA J7 D1	1
TRIP FB J7 D1	1
TRIP FC J7 D1	1
TRIP FA J8 D1	1
TRIP FB J8 D1	1
TRIP FC J8 D1	1
TRIP FA J7 D2	1
TRIP FC J7 D2	1
TRIP FA J8 D2	1
TRIP FC J8 D2	1

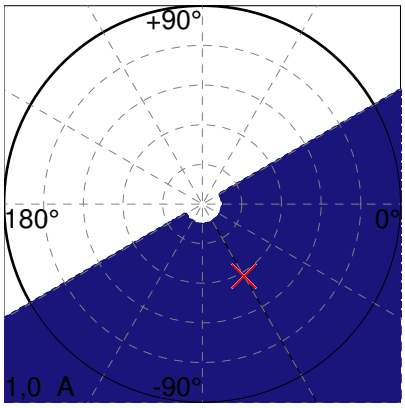
Shot Test Results:

Type	Relative To	Factor	Magnitude	Angle	tnom	tact	Deviation	Overload	Result
L1-E	Neutral TOC1	4,194	419,4 m A	-60,00 °	818,2 ms	No trip	n/a	No	Failed
L2-E	Neutral TOC1	4,194	419,4 m A	-60,00 °	818,2 ms	No trip	n/a	No	Failed
L3-E	Neutral TOC1	4,194	419,4 m A	-60,00 °	818,2 ms	No trip	n/a	No	Failed

Charts for Fault Types:

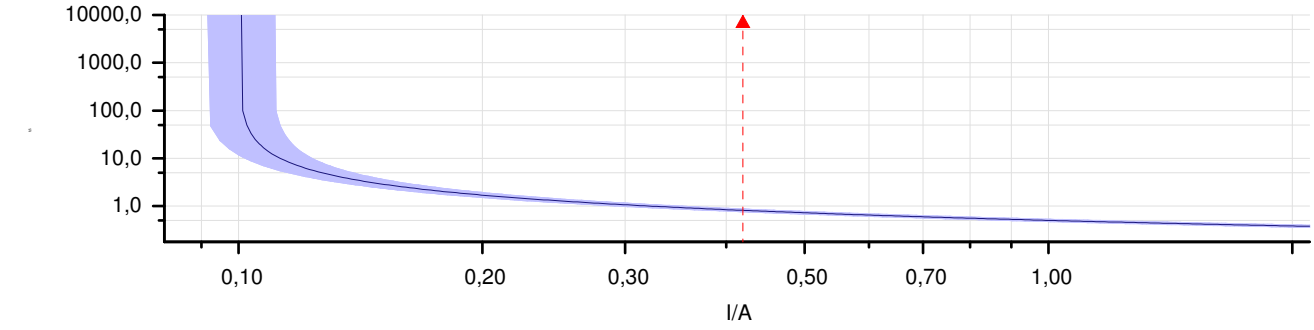
Type	Angle
L1-E	-60,00 °

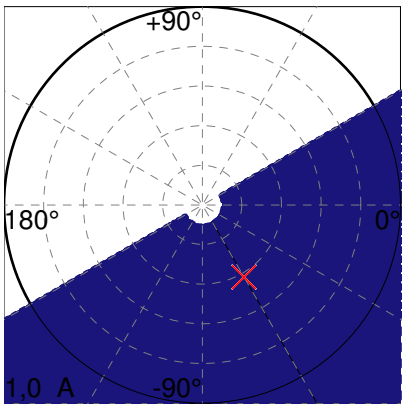




Charts for Fault Types:

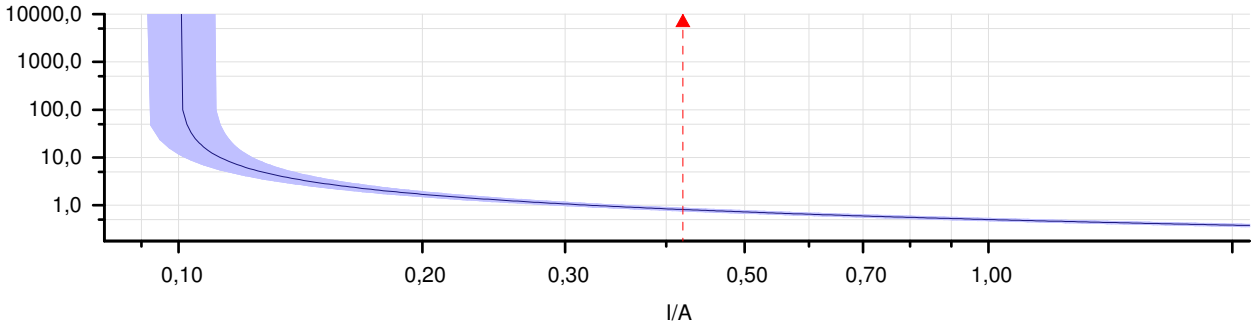
Type	Angle
L2-E	-60,00 °

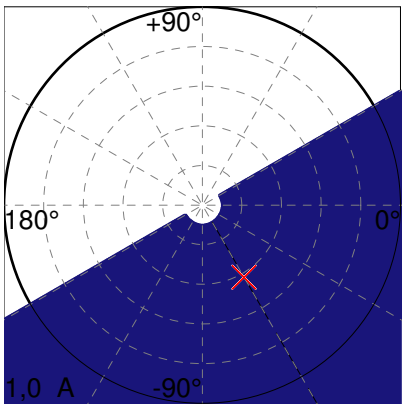




Charts for Fault Types:

Type	Angle
L3-E	-60,00 °





State:

3 out of 3 points tested.
0 points passed.
3 points failed.

General Assessment: Test passed! (manually assessed!)

Group end:4.2 - Neutro y 67N

Group end:4. Sobrecorrientes

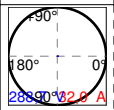
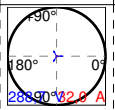
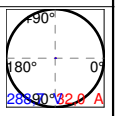
Group:5. SOTF - Switch On To Fault

32,84

LINE PICKUP /PF VOLT Y CORR=0/; F: CORR FALLA Y VOLT BAJO OP.:

Test Settings

State	PRF1	F1	PF1
V L1-E	0,000 V 0,00 ° 50,000 Hz	35,00 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	0,000 V -120,00 ° 50,000 Hz	35,00 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz

V L3-E	0,000 V 120,00 ° 50,000 Hz	35,00 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	700,0 mA 0,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	700,0 mA -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	700,0 mA 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
Max. State Time	3,000 s	3,000 s	1,000 s
Trigger Logic			
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

Comment

Test Module

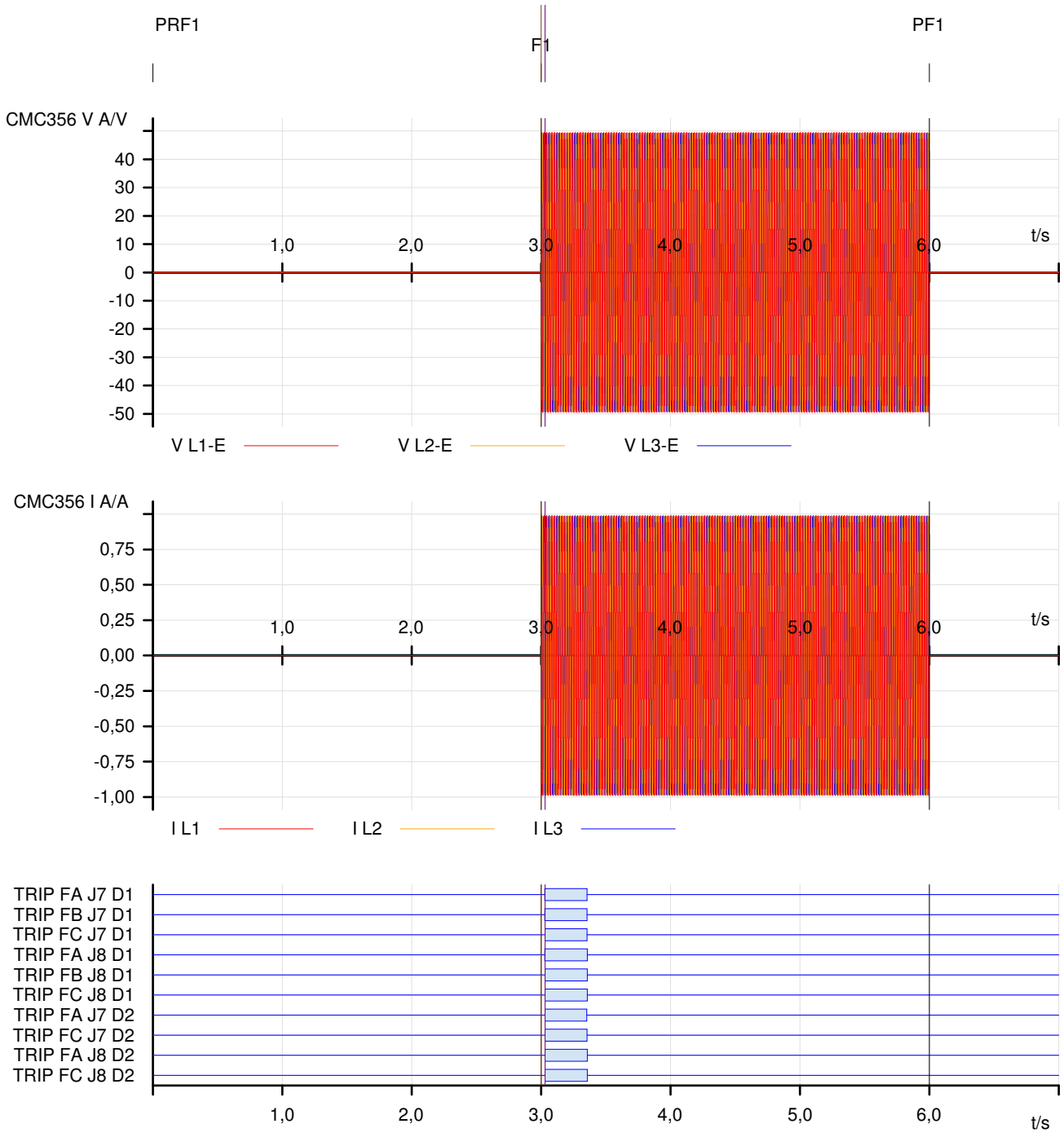
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	19-mar.-2019 15:08:19	Test End:	19-mar.-2019 15:08:28
User Name:		Manager:	
Company:			

Test Results

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
FALLA 1	F1	F1	TRIP FA J7 D1 0>1	0,000 s	70,00 ms	70,00 ms	28,50 ms	28,50 ms	+

Assess: + .. Passed x .. Failed o .. Not assessed



Cursor Data

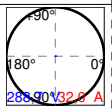
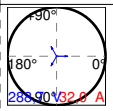
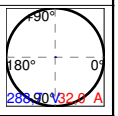
	Time	Signal	Value
Cursor 1	3,03 s	<none>	n/a
Cursor 2	3,00 s	<none>	n/a
C2 - C1	-30,00 ms		n/a

Test State:

Test passed

LINE PICKUP NO OP X INCUMPLIMIENTO DE INYECCIÓN V Y I :

Test Settings

State	PRF1	F1	PF1
V L1-E	0,000 V 0,00 ° 50,000 Hz	66,40 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	0,000 V -120,00 ° 50,000 Hz	66,40 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	0,000 V 120,00 ° 50,000 Hz	66,40 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	400,0 mA 0,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	400,0 mA -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	400,0 mA 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
Max. State Time	3,000 s	3,000 s	1,000 s
Trigger Logic			
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

Comment

Test Module

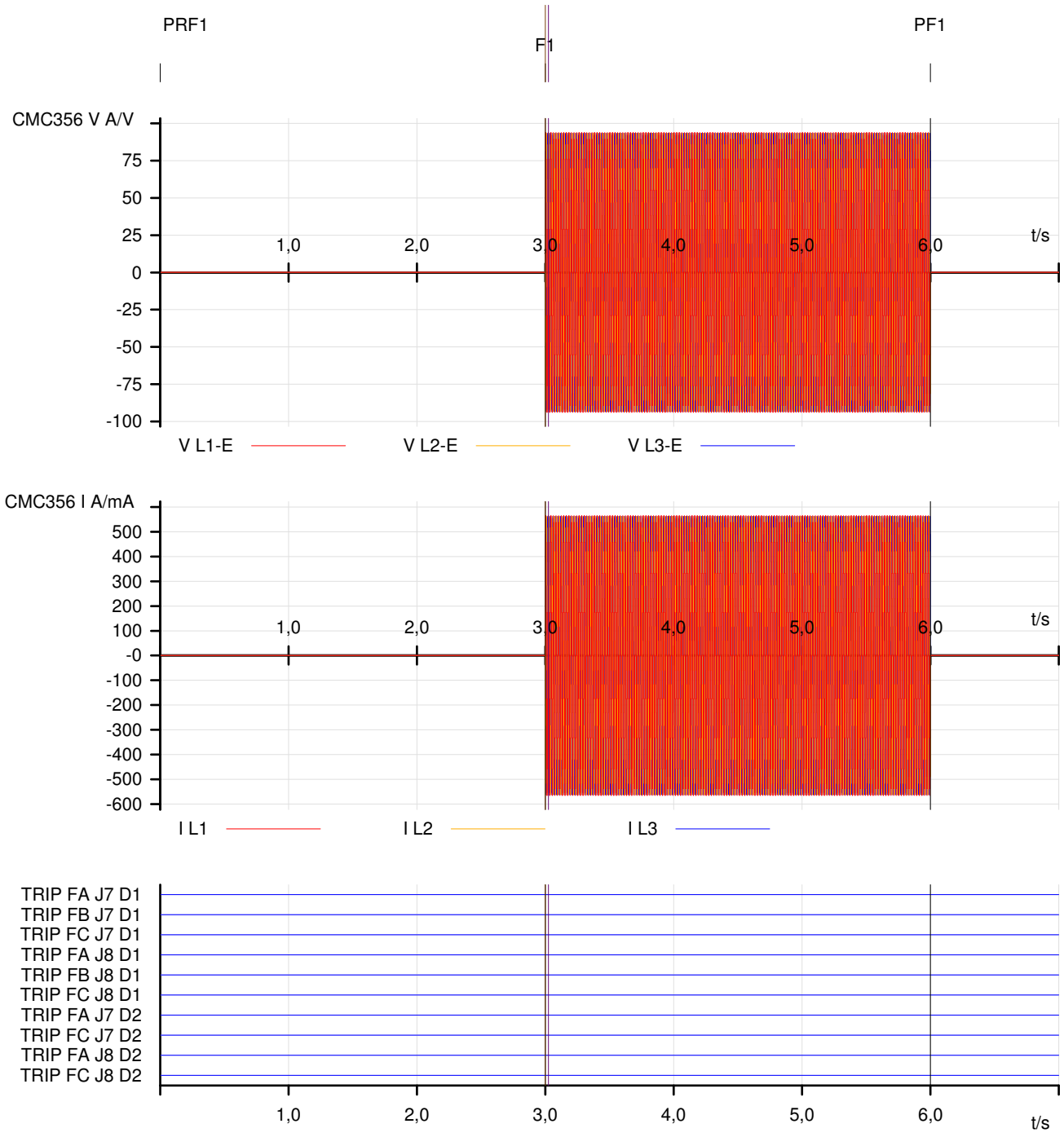
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	19-mar.-2019 15:16:42	Test End:	19-mar.-2019 15:16:51
User Name:		Manager:	
Company:			

Test Results

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
FALLA 1	F1	F1	TRIP FA J7 D1 0>1	0,000 s	70,00 ms	70,00 ms			x

Assess: + .. Passed x .. Failed o .. Not assessed



Cursor Data

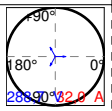
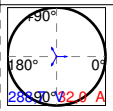
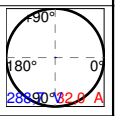
	Time	Signal	Value
Cursor 1	3,02 s	<none>	n/a
Cursor 2	3,00 s	<none>	n/a
C2 - C1	-24,60 ms		n/a

Test State:

Test passed (manually assessed!)

LINE PICKUP OP X PRF Y OVERVOLTAGE EN 30ms :

Test Settings

State	PRF1	F1	PF1
V L1-E	63,51 V 0,00 ° 50,000 Hz	63,51 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	63,51 V -120,00 ° 50,000 Hz	63,51 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	63,51 V 120,00 ° 50,000 Hz	63,51 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	800,0 mA 0,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	800,0 mA -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	800,0 mA 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
FA J7 CERR	0	0	0
FB J7 CERR	0	0	0
FC J7 CERR	0	0	0
3F J7 ABIER	1	1	0
Max. State Time	30,00 ms	3,000 s	1,000 s
Trigger Logic	OR		
TRIP FA J7 D1	1		
TRIP FB J7 D1	1		
TRIP FC J7 D1	1		
TRIP FA J8 D1	1		
TRIP FB J8 D1	1		
TRIP FC J8 D1	1		
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

C o m m e n t

Test Module

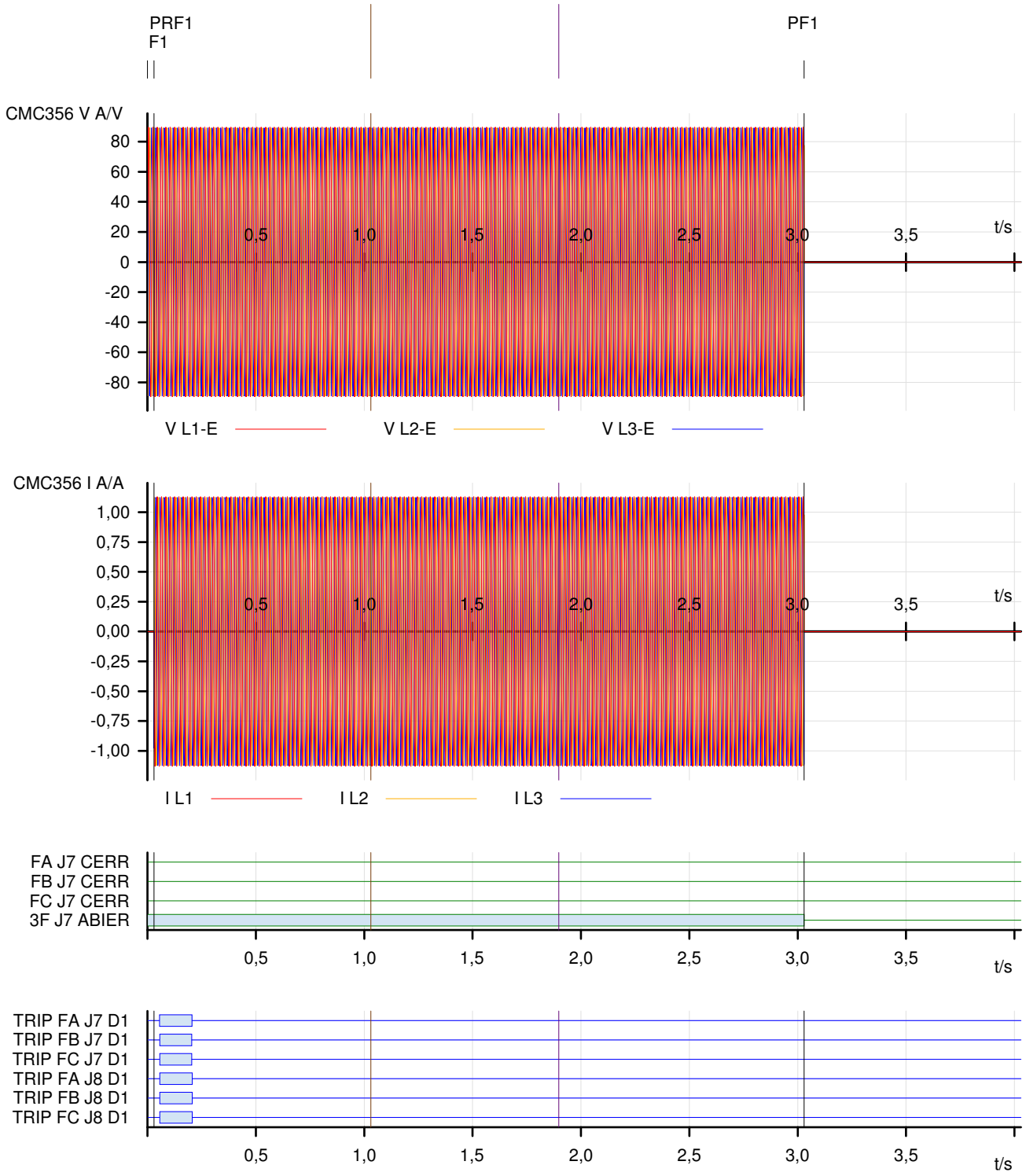
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	19-mar.-2019 19:20:15	Test End:	19-mar.-2019 19:20:21
User Name:		Manager:	
Company:			

T e s t R e s u l t s

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
FALLA 1	F1	F1	TRIP FA J7 D1 0>1	0,000 s	70,00 ms	70,00 ms	26,20 ms	26,20 ms	+

Assess: + .. Passed x .. Failed o .. Not assessed



Cursor Data

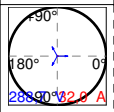
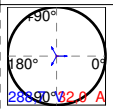
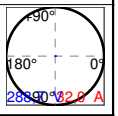
	Time	Signal	Value
Cursor 1	1,90 s	<none>	n/a
Cursor 2	1,03 s	<none>	n/a
C2 - C1	-867,50 ms		n/a

Test State:

Test passed

LINE PICKUP NO OP X PRF Y OVERVOLTAGE EN 50ms :

Test Settings

State	PRF1	F1	PF1
V L1-E	63,51 V 0,00 ° 50,000 Hz	63,51 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	63,51 V -120,00 ° 50,000 Hz	63,51 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	63,51 V 120,00 ° 50,000 Hz	63,51 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	800,0 mA 0,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	800,0 mA -120,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	800,0 mA 120,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
FA J7 CERR	0	0	0
FB J7 CERR	0	0	0
FC J7 CERR	0	0	0
3F J7 ABIER	1	1	0
Max. State Time	50,00 ms	3,000 s	1,000 s
Trigger Logic	OR		
TRIP FA J7 D1	1		
TRIP FB J7 D1	1		
TRIP FC J7 D1	1		
TRIP FA J8 D1	1		
TRIP FB J8 D1	1		
TRIP FC J8 D1	1		
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

Comment

Test Module

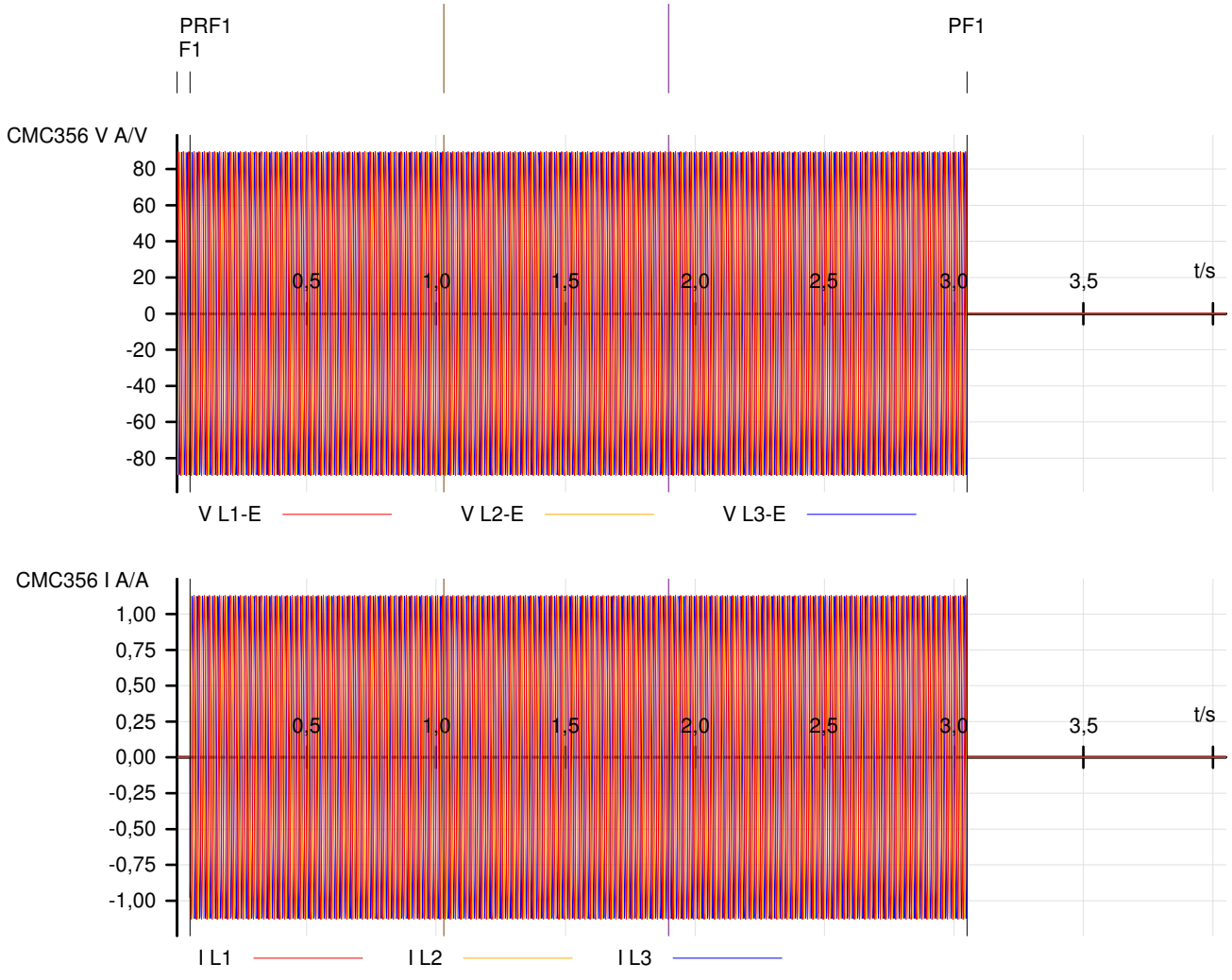
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	19-mar.-2019 19:18:43	Test End:	19-mar.-2019 19:18:49
User Name:		Manager:	
Company:			

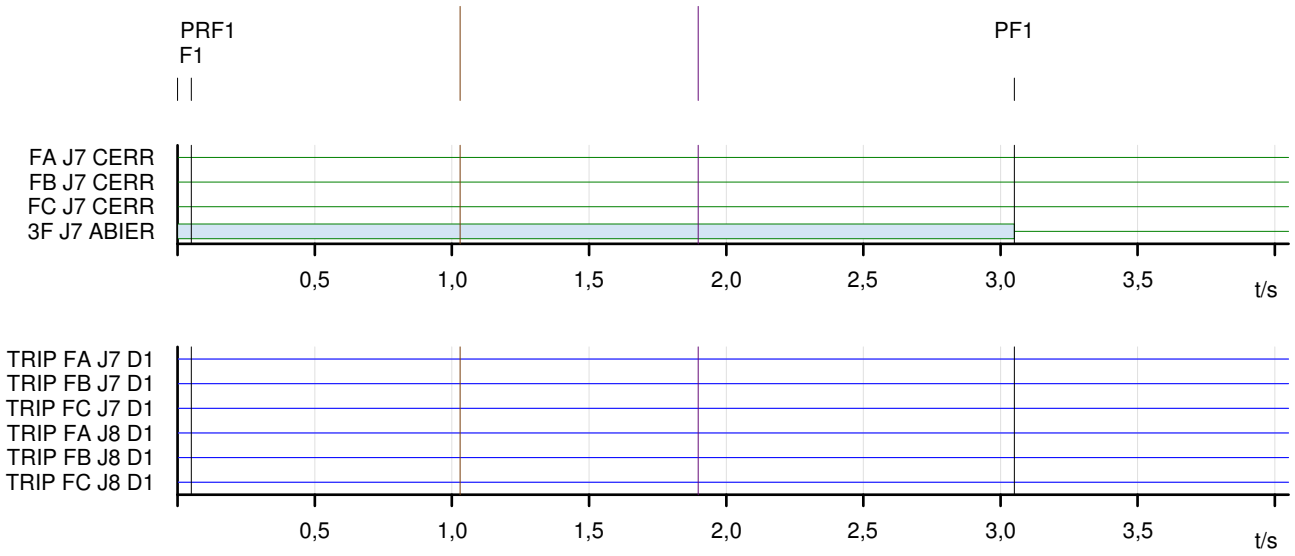
Test Results

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
FALLA 1	F1	F1	TRIP FA J7 D1 0>1	0,000 s	70,00 ms	70,00 ms			x

Assess: + .. Passed x .. Failed o .. Not assessed





Cursor Data

	Time	Signal	Value
Cursor 1	1,90 s	<none>	n/a
Cursor 2	1,03 s	<none>	n/a
C2 - C1	-867,50 ms		n/a

Test State:

Test passed (manually assessed!)

---------- Group end:5. SOTF - Switch On To Fault ----------

---------- Group:13. 50BF - CB Fail ----------

Hardware Configuration 3

Test Equipment

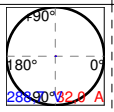
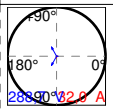
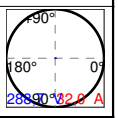
Type	Serial Number
CMC356	LC604U

Hardware Check

Performed At	Result	Details
19-03-2019 16:35:26	Passed	

50BF POR TRIP:

Test Settings

State	PRF	FALLA 50BF Y RETRIP	POSTFALLA
V L1-E	0,000 V 0,00 ° 50,000 Hz	5,059 V 0,00 ° 50,000 Hz	0,000 V 0,00 ° 50,000 Hz
V L2-E	0,000 V -120,00 ° 50,000 Hz	63,51 V -120,00 ° 50,000 Hz	0,000 V -120,00 ° 50,000 Hz
V L3-E	0,000 V 120,00 ° 50,000 Hz	63,51 V 120,00 ° 50,000 Hz	0,000 V 120,00 ° 50,000 Hz
I L1	0,000 A 0,00 ° 50,000 Hz	1,104 A -90,04 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz
I L2	0,000 A -120,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz	0,000 A -120,00 ° 50,000 Hz
I L3	0,000 A 120,00 ° 50,000 Hz	0,000 A 0,00 ° 50,000 Hz	0,000 A 120,00 ° 50,000 Hz
Max. State Time	100,0 ms	300,0 ms	50,00 ms
Trigger Logic			
User interaction	no	no	no
CMGPS trigger	no	no	no
IRIG-B/PTP trigger	no	no	no
Pulses / seconds	1	1	1
Delay after Tr.	0,000 s	0,000 s	0,000 s
On trigger jump to test end	no	no	no
Diagrams			

Comment

Test Module

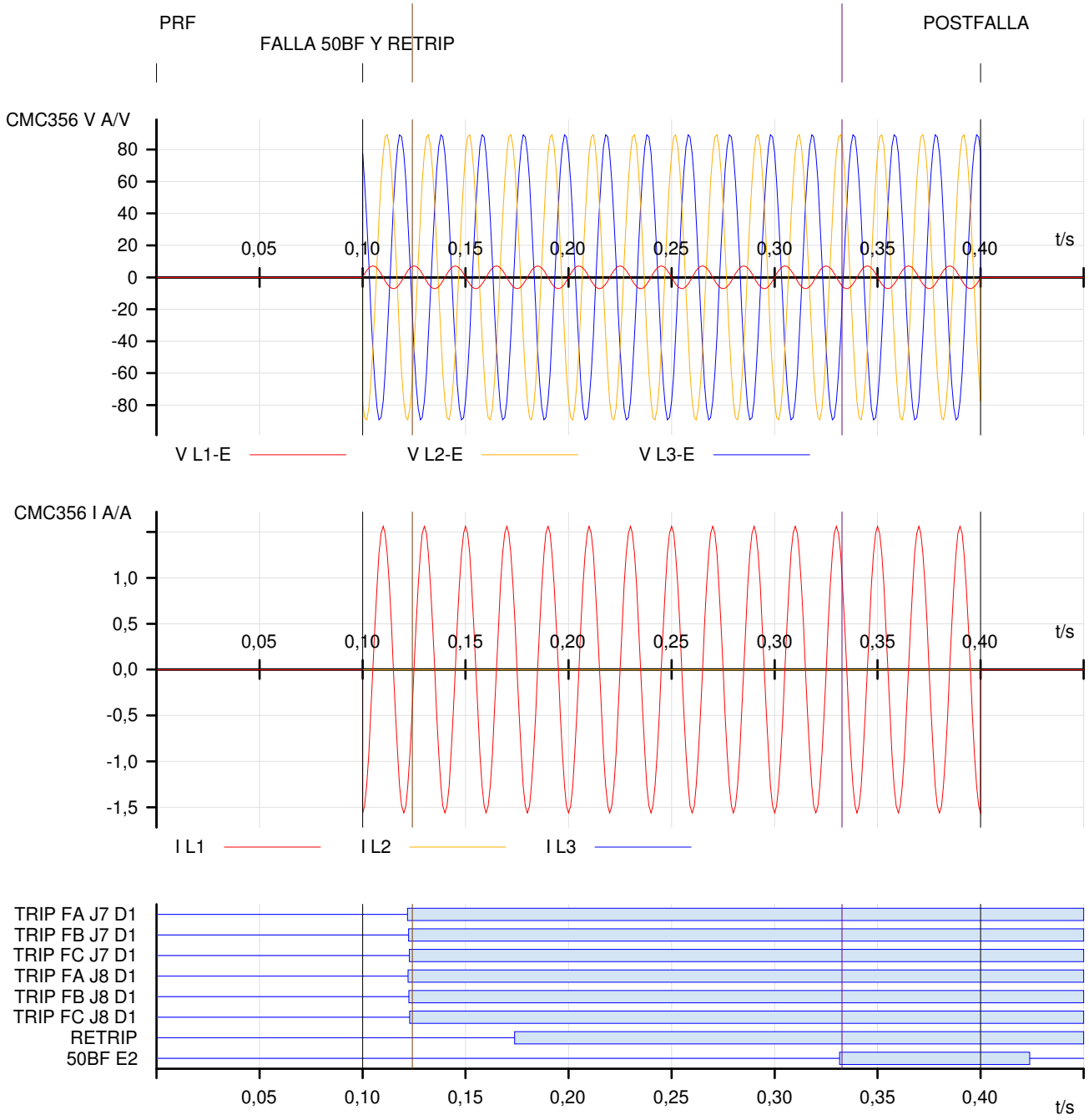
Name:	OMICRON State Sequencer	Version:	3.20
Test Start:	19-mar.-2019 16:49:38	Test End:	19-mar.-2019 16:49:40
User Name:		Manager:	
Company:			

Test Results

Time Assessment

Name	Ignore before	Start	Stop	Tnom	Tdev-	Tdev+	Tact	Tdev	Assess
TRIP			TRIP FA J7 D1 0>1	150,0 ms	70,00 ms	70,00 ms			o
RETRIP	FALLA 50BF Y RETRIP	FALLA 50BF Y RETRIP	TRIP FB J7 D1 0>1	50,00 ms	70,00 ms	70,00 ms	22,40 ms	-27,60 ms	+
50BF	FALLA 50BF Y RETRIP	FALLA 50BF Y RETRIP	TRIP FC J7 D1 0>1	200,0 ms	70,00 ms	70,00 ms	22,80 ms	-177,2 ms	x

Assess: + .. Passed x .. Failed o .. Not assessed



Cursor Data

	Time	Signal	Value
Cursor 1	332,70 ms	<none>	n/a
Cursor 2	124,10 ms	<none>	n/a
C2 - C1	-208,60 ms		n/a

Test State:

Test passed (manually assessed!)

----------Group end:13. 50BF - CB Fail----------

PROTOCOLO DE PRUEBAS CEN
Diagonal 3 – Protección de Línea STEN – SCHA cto1 – Sistema 2

S/E: TEN ☒ CHA ☐ CUM ☐ NCA ☐ 500Kv ☐ 220Kv ☒ D1 ☐ D2 ☐ D3 ☒

Objetivo de la prueba:	☐Protección Diferencial de Línea (F87L) S1 ☒Protección Diferencial de Línea (F87L) S2	☐Protección de Distancia (F21/21N) S1 ☐Protección de Distancia (F21/21N) S2

Condiciones iniciales: Equipo en explotación y funcionando correctamente	Equipos de Prueba: Omicron CMC 356
Condiciones de la prueba: Protección bloqueada	Documentos de referencia: EE-ES-2017-0936-R2_ANEXO_II_Ajustes Proyecto TEN-NUEVA CARDONES_Parte A

	Actividades realizadas:	APROBADO	RECHAZADO	NO APLICA	Observación:
1	Verificación Inicio Software y Hardware (Autorun)	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
2	Verificación de Entradas y Salidas digitales	✓	☐	☐	
3	Verificación de medidas (Entradas Analógicas) ☒ I1E,I2E,I3E ☐ IS1E, IS2E,IS3E ☐ F1E,F2E,F3E ☐ F123(+) ☐ F123(30°) ☐ Hz ☐ MW ☐ MVAR ☐ COS ø	✓	☐	☐	
4	Verificación de block de pruebas	✓	☐	☐	
5	=> Función F87L ☒ Arranque ☒ Tiempo de operación ☒ Caract. I dif. ☒ Estabilidad ☒ Bloqueo ☐ Intertrip ☐ Búsqueda ☐ TDD	✓	☐	☐	

Software Versión: EnerVista UR Setup Firmware: 7.12K	Comentarios y Conclusión del Protocolo: Los resultados obtenidos de las pruebas fueron satisfactorios
Documentos adjuntos: Informe Omicron	

TEN	TEN	CEN
Nombre: Pablo Alvarez Sana	Nombre: Jean Paul Mora	Nombre:
Fecha: 19 – Marzo – 2019	Fecha: 22 – Abril – 2019	Fecha:
Firma: 	Firma: 	Firma:

UNA EMPRESA RED ELÉCTRICA INTERNACIONAL Y ENGIE

PROTOCOLO DE PRUEBAS CEN
Diagonal 3 – Protección de Línea STEN – SCHA cto1 – Sistema 2

S/E: TEN ☒ CHA ☐ CUM ☐ NCA ☐ 500Kv ☐ 220Kv ☒ D1 ☐ D2 ☐ D3 ☒

Objetivo de la prueba:	☐Protección Diferencial de Línea (F87L) S1 ☐Protección de Distancia (F21/21N) S1 ☒Protección Diferencial de Línea (F87L) S2 ☐Protección de Distancia (F21/21N) S2

Condiciones iniciales: Equipo en explotación y funcionando correctamente	Equipos de Prueba: Omicron CMC 356
Condiciones de la prueba: Protección bloqueada	Documentos de referencia: EE-ES-2017-0936-R2_ANEXO_II_Ajustes Proyecto TEN-NUEVA CARDONES_Parte A

6	=> Función F21/21N ☐ Arranque F1,F2,F3,F123,F123(-30 ☐ Tiempo de operación ☐ Curva Carac. Z1,Z2,Z3,Z4 ☐ Búsqueda de Zona ☐ Sobrecorriente de emergencia ☐ Pérdida de Comunicación ☐ Localización de Falla ☐ 85A	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
7	=> Función F50/50N ☐ Arranque ☐ Tiempo de Operación	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
8	=> Función F51/51N ☐ Arranque ☒ Tiempo de operación ☐ Curva ANSI ☒ Curva IEC	✓	☐	☐	Se solicita probar solo 51 de fase y bloqueo de emergencia.
9	=> Función F50BF ☐ Arranque ☒ Tiempo 1 (Retrip) ☒ Tiempo 2 Disparo Barra ☐ Estabilidad ☐ Criterio de Arranque (Corriente) ☐ Criterio de Arranque (Contacto)	✓	☐	☐	Se prueba según lo solicitado solo por función interna de la protección.
10	=> Función F68 ☐ Bloqueo Z1	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.

Software Versión: EnerVista UR Setup Firmware: 7.12K	Comentarios y Conclusión del Protocolo: Los resultados obtenidos de las pruebas fueron satisfactorios
Documentos adjuntos: Informe Omicron	

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PROTOCOLO DE PRUEBAS CEN
Diagonal 3 – Protección de Línea STEN – SCHA cto1 – Sistema 2

S/E: TEN ☒ CHA ☐ CUM ☐ NCA ☐ 500Kv ☐ 220Kv ☒ D1 ☐ D2 ☐ D3 ☒

Objetivo de la prueba:	☐Protección Diferencial de Línea (F87L) S1 ☐Protección de Distancia (F21/21N) S1 ☒Protección Diferencial de Línea (F87L) S2 ☐Protección de Distancia (F21/21N) S2

Condiciones iniciales: Equipo en explotación y funcionando correctamente	Equipos de Prueba: Omicron CMC 356
Condiciones de la prueba: Protección bloqueada	Documentos de referencia: EE-ES-2017-0936-R2_ANEXO_II_Ajustes Proyecto TEN-NUEVA CARDONES_Parte A

11	=> Función F27 y Función F59 ☐ Arranque ☐ Tiempo de operación	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
12	=> Función F67/67N ☐ Arranque ☒ Tiempo de operación ☒ Zona de operación	✓	☐	☐	Solo se prueba la 67N, y bloqueo de la función por emergencia.
13	=> Recierre Monopolar ☐ Exitoso ☐ Bloqueo Recierre ☐ Tiempo Muerto ☐ Por Sistema S2	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
14	=> Teleprotección ☒ 85A ☐ 85B ☐ 85C ☐ 85D	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
15	=> Función 50 ST (Cabo de línea) ☐ Arranque ☐ Tiempo de operación ☐ Bloqueo	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.
16	=> Cierre contra falla ☒ Arranque ☒ Tiempo de operación	✓	☐	☐	Se prueba también bloqueo de la función por incumplimiento de condiciones.
17	=> Función 60 ☐ Bloqueo 21/21N ☐ Bloqueo direccionalidad 67N	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.

Software Versión: EnerVista UR Setup	Comentarios y Conclusión del Protocolo: Los resultados obtenidos de las pruebas fueron satisfactorios
Firmware: 7.12K	

Documentos adjuntos:
Informe Omicron

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PROTOCOLO DE PRUEBAS CEN
Diagonal 3 – Protección de Línea STEN – SCHA cto1 – Sistema 2

S/E: TEN ☒ CHA ☐ CUM ☐ NCA ☐ 500Kv ☐ 220Kv ☒ D1 ☐ D2 ☐ D3 ☒

Objetivo de la prueba:	☐Protección Diferencial de Línea (F87L) S1 ☒Protección Diferencial de Línea (F87L) S2	☐Protección de Distancia (F21/21N) S1 ☐Protección de Distancia (F21/21N) S2
Condiciones iniciales: Equipo en explotación y funcionando correctamente	Equipos de Prueba: Omicron CMC 356	
Condiciones de la prueba: Protección bloqueada	Documentos de referencia: EE-ES-2017-0936-R2_ANEXO_II_Ajustes Proyecto TEN-NUEVA CARDONES_Parte A	

18 Pruebas de redundancia de red ☐ IEC61850 ☐ Falla canal 1 ☐ Falla canal 2	☐	☐	✓	Esta prueba NO se solicitó para esta auditoría.

Software Versión: EnerVista UR Setup Firmware: 7.12K	Comentarios y Conclusión del Protocolo: Los resultados obtenidos de las pruebas fueron satisfactorios
Documentos adjuntos: Informe Omicron	

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