FACTORY TEST REPORT # 4.8

Customer	:	Panel Description	:
Primary Station	:	Panel Ref. No.	:
Manufacturer	: ABB	Equipment Description	:
Type	:	Tag No.	:
Serial No.	: 636887	Year of manufacture	:
		Room temperature	:

AVC RELAY

1. MACHENICAL CHECKS AND VISUAL INSPECTION:

ITEM	DESCRIPTION	CHECKED
1	Inspect for physical damage / defects.	
2	Verify connections as per approved drawings.	
3	Check tightness of all connection.	

2. ELECTRICAL TESTS:

1. FUNCTIONAL TEST:

ITEM	DESCRIPTION	CHECKED
1	Test switch / plug checked for correct function.	
2	Indications checked.	
3	Alarm contacts checked.	
4	Case earthing checked	
5	CT shorting links checked.	

2. MEASUREMENT:

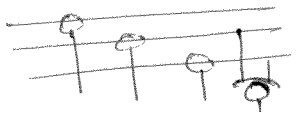
Voltage measurement:

Injected Voltage(V)	Injected Voltage (%Vn)	Reading on relay
100 V	57.74 V	1.00

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date	Signature	Date	Signature	Date

In the relay front panel

3PCU 1D50



Um Im Ud IRF

Display

- Us/Un
- ΔUs [%. Un]
- T1 [s]
- T2 [s]
- I>/In
- U</Un
- U>/Un
- LDC Ur
- LDC Ux
- Parallel
- Man

Reset/step

PROGRAM

Auto/manual.

Parallel

• out

3PCN 1D56

POS IRF LED

Display

Reset/step

Program

- I>
- U< undervoltage
- U> overvoltage
- Block
- ↑
- ↓
- TCO

manual LED

Use Auto Mode for testing.

For checking input voltage & current measurement

1) Press 3PCU 1D50 Reset step button, the display glows from dark, then the led runs in the menu. By pressing the select button select Um. and inject 100V. It is displayed in the relay as 1.

2) For current measuremant, selelt Im, ~~If I is disp~~ If I>

and inject current 5A or 1A as ~~per~~ per connection.

3) for Regulating value Telt [connect (X1) 1-2 or 3-4 for alarm o/p in multimeter.

set ΔUs = 1.5, T1 = 0, T2 = 0. ~~For~~ on the Automode

manual off by pressing ~~Auto~~ Auto. Inject 100V, and vary upto 98V to 102V. When it reaches 98.5V, the output led glows. means there is raise or lower ~~output~~ output signal.

FACTORY TEST REPORT # 4.8

Customer	:	Panel Description	:
Primary Station	:	Panel Ref. No.	:
Manufacturer	:	Equipment Description	:
Type	:	Tag No.	:
Serial No.	:	Year of manufacture	:
		Room temperature	:

Current measurement:

Injected Current (A)	Reading on relay
1A	1.00
0.5	0.51

3. REGULATING VALUE TEST:

T_1 = 0 Sec, T_2 = 0 Sec

Scale Setting Un%	Pick up Voltage ΔU = 5 %				Balance %
	Raise		Lower		
	Expected	Actual	Expected	Actual	
1.5 %	98.5 V	98.1 V	101.5 V	101.6 V	
5 %	95.0 V	94.2 V	105.0 V	105.5 V	

Range setting: 0.85 – 1.15 Vn

4. DEGREE OF SENSIVITY TEST:

Scale Setting ΔU %	Pick up Voltage Un = 100 %				Band Width V	Band Width %
	Raise		Lower			
1.5%	98.5V	98.3V	101.5V	101.7V	~~1.7 3.4V~~	~~3.4~~ %
					1.7 V	1.7 %

Range of setting : 0.6% - 9%

5. UNDER VOLTAGE BLOKING TEST:

Scale Setting Vn%	PICK UP	RESET
70% of 100V = 70V.	69.6 V	70.1 V
80% = 80V	79.8V	79.9 V

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date	Signature	Date	Signature	Date

* Test in Auto mode

How to make Settings.

For changing the settings.

ex⇒ For T_1 (s) — T_1 setting is displayed in screen.

Press Reset/Step button & Select T_1 ; Then press program 5 seconds, then the display will blink.

Again press program for 1sec, so the right hand digit will blink. if you want to set the value, press Reset step, the u can increase the value from 0 to 1.

for 2nd digit, again press ~~press~~ program. u can go for 2nd digit and same as for 3rd digit. Then again press program, now the decimal point blinks, if you Want to change decimal position, press ~~step reset~~ ~~s~~ reset step.

After making changes in decimal, press program. Now all the 3 digit ~~are~~ blink. Then press simultaneously Reset Step & program ~~Push~~ button. Now only the Changed value is ~~stored~~ recorded.

---

4) 3 & 4 are same.

5) under voltage.

Set U< = 0.70 means 70% of 100V. When voltage reduces below 70V, then U< led blinks in SPCN LOGO and the output lower or raise blocked.

Make sure that the relay in auto mode.

FACTORY TEST REPORT # 4.8

Customer	:	Panel Description	:
Primary Station	:	Panel Ref. No.	:
Manufacturer	:	Equipment Description	:
Type	:	Tag No.	:
Serial No.	:	Year of manufacture	:
		Room temperature	:

6. OVER CURRENT BLOCKING TEST:

Scale Setting In%	PICK UP	RESET
150% of 1A = 1.5A	~~1.48A~~ 1.508A	1.504A
(Relay Reading = 1.5)	1.52A	1.5A

7. OVER VOLTAGE BLOKING TEST:

Scale Setting Vn%	PICK UP	RESET

Range of setting: 1.05 – 1.25

8. TEST OF R COMPENSATION:

Settings: X = 0 ΔUs = 1.5% Ur = 5.00 Us = 100 x Un Phase Angle = 0

	EXPECTED READING (V)		ACTUAL READING (V)	
CURRENT (A)	Raise	Lower	Raise	Lower
0			98.0V	101.5V
0.25			96.9V	100.5V
0.5			95.8V	99.4V
0.75			94.8V	98.5V
1			93.7V	97.5V

$T_1 = 0$

$T_2 = 0$

$U_x = 0$

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date	Signature	Date	Signature	Date

6) for over current

The default setting is 2. check the relay is connected in 1A or 5A.

if it is 5A, when the injected current exceeds 10 A, then it trips means => led blinks.

7) for over voltage

Set 1.25 = 125% of Vnom. Inject 125V, check the relay then U> Led blinks.

8) Test of R compensation

Set $U_R = 0$, $U_X = 5$, $\Delta U_S = 1.5$, phase angle = 90 => in beja.

The check the raise & lower output.

9) For Timing

SGF1/5 = 0 => for independent timing test.
SGF1/5 = 1 => for inverse timing test.

How to go SGF1

press reset Step button continuously, it goes Um, Im, Vd, Vm, ΔVs, T_1, T_2 .... after that it comes 1 016. This SGF1. (Red color)

Again press 2 028. This is SGF2. (Red color) Again press 3 580. It is counter. In SGF1, press program 5S, the whole screen display will blink, then press program 1 sec, right digit will blink, then press again program, second digit from right blink. Then as usual.

FACTORY TEST REPORT # 4.8

Customer	:	Panel Description	:
Primary Station	:	Panel Ref. No.	:
Manufacturer	:	Equipment Description	:
Type	:	Tag No.	:
Serial No.	:	Year of manufacture	:
		Room temperature	:

Settings: X = 0 ΔUs = 1.5 Ur = 5 Us = 100 x Un Phase Angle = 180

CURRENT (A)	EXPECTED READING (V)		ACTUAL READING (V)	
	Raise	Lower	Raise	Lower
0			98.0V	101.6V
0.25			99.1V	102.7V
0.5			100.1V	103.8V
0.75			101.2V	104.8V
1			102.2V	105.8

$T_1 = 0$
$T_2 = 0$
$U_x = 0$

9. TEST OF X COMPENSATION:

Settings: R = 0 ΔUs = 1.5 Ux = 5 Us = 100 x Un Phase Angle = 90

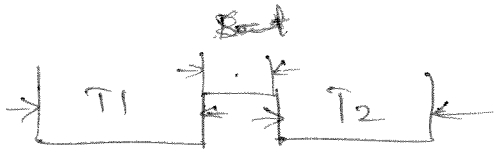
CURRENT (A)	EXPECTED READING (V)		ACTUAL READING (V)	
	Raise	Lower	Raise	Lower
0			98.0V	101.5V
0.25			96.9V	100.7V
0.5			95.8V	99.3V
0.75			94.9V	98.3V
1			93.7V	97.2V

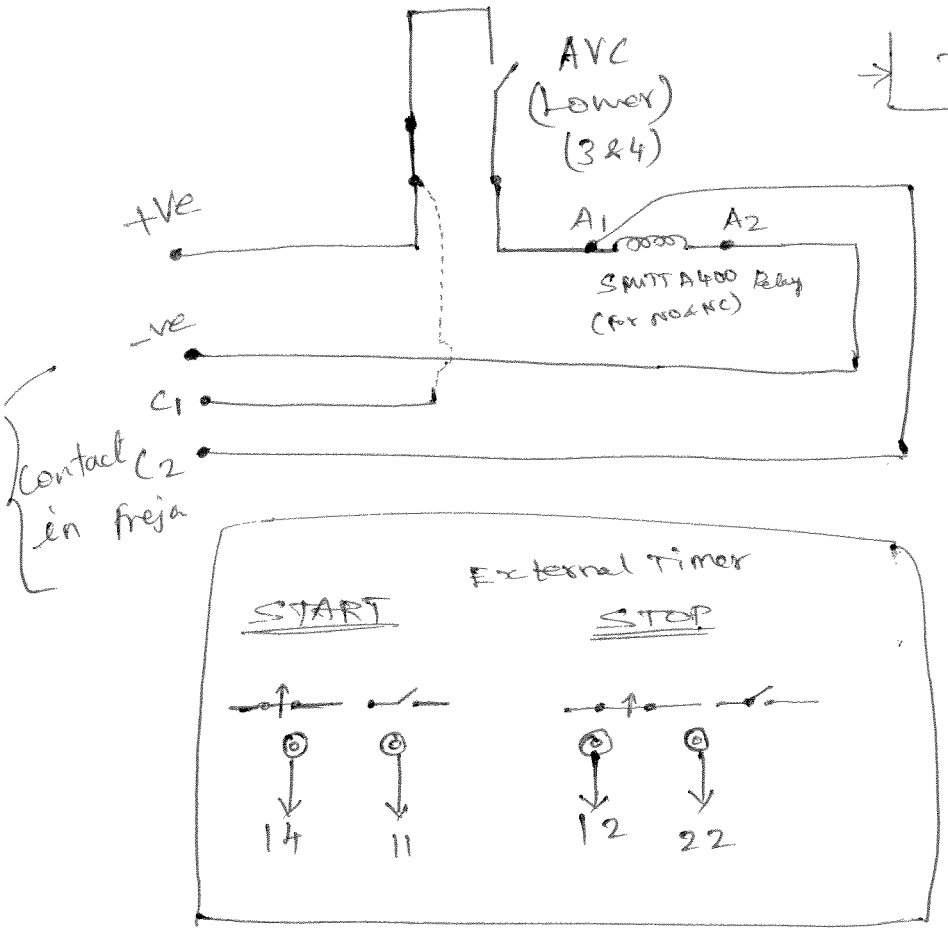
$T_1 = 0$
$T_2 = 0$
$U_R = 0$

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date	Signature	Date	Signature	Date

For timing test T_1 & T_2.

Use external timer for T_2.





A_1 → Positive (thro lower terminal NO contact)

A_2 → Negative

11 & 14 → NO

21 & 22 → NC

FACTORY TEST REPORT # 4.8

Customer	:	Panel Description	:
Primary Station	:	Panel Ref. No.	:
Manufacturer	:	Equipment Description	:
Type	:	Tag No.	:
Serial No.	:	Year of manufacture	:
		Room temperature	:

Settings: R = 0 ΔU s= 1.5 Ux = 5 Us = 100 x Un Phase Angle = 270

T1=0; T2=0; UR=0

CURRENT (A)	EXPECTED READING (V)		ACTUAL READING (V)	
	Raise	Lower	Raise	Lower
0			98.0V	101.6V
0.25			99.2V	102.6V
0.5			100.2V	103.6V
0.75			101.2V	104.7V
1			102.3V	105.8V

8. INDEPENDENT TIMING TEST:
Settings: SGF 1/5 = 0.

Time Setting (sec)	Injected Voltage (V)	State	Expected Time (sec)	Measured Time (sec)	
				T1	T2
5	120	Lower	5		
10	120	Lower	10		
5	95.3	Raise	5		
10	95.3	Raise	10		

9. INVERSE TIMING TEST: SGF 1/5 = 1.

Time Setting (sec)	Injected Voltage (V)	State	Expected Time (sec)	Measured Time (sec)	
				T1	T2
15	105	Lower	3.1	3.09	3.28
30	105	Lower	6.1	5.92	6.87
15	95	Raise	3.1	3.25	4.04
30	95	Raise	6.1	6.47	7.28

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date	Signature	Date	Signature	Date

FACTORY TEST REPORT # 4.8

Customer	:	Panel Description	:
Primary Station	:	Panel Ref. No.	:
Manufacturer	:	Equipment Description	:
Type	:	Tag No.	:
Serial No.	:	Year of manufacture	:
		Room temperature	:

10. BINARY OUTPUT TEST

AUTO : Ok
MAN : Ok
RAISE : Ok
LOWER : Ok
I> : ok
U< : ok
U> : ok

11. BINARY INPUT TEST

BLOCK :
TCO :
RSV :
RAISE :
LOWER :
AUTO :
MAN :

Check in scheme checking.

TEST EQUIPMENTS USED : ESA, Freja

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date	Signature	Date	Signature	Date

FACTORY TEST REPORT # 4.8

Customer	: SEC	Panel Description	: 110/13.8 KV AVC PNL.
Primary Station	: 1CY4	Panel Ref. No.	: FWJ01
Manufacturer	: ABB	Equipment Description	: 170
Type	: UPAM 341 C1	Tag No.	: C01
Serial No.	: 636575	Year of manufacture	:
		Room temperature	:

AVC RELAY

1. MACHENICAL CHECKS AND VISUAL INSPECTION:

ITEM	DESCRIPTION	CHECKED
1	Inspect for physical damage / defects.	OK
2	Verify connections as per approved drawings.	OK
3	Check tightness of all connection.	OK

2. ELECTRICAL TESTS:

1. FUNCTIONAL TEST:

ITEM	DESCRIPTION	CHECKED
1	Test switch / plug checked for correct function.	OK
2	Indications checked.	OK
3	Alarm contacts checked.	OK
4	Case earthing checked	OK
5	CT shorting links checked.	OK

2. MEASUREMENT:

Voltage measurement: 4-100 VOLTS = 1.0%

Injected Voltage(V)	Injected Voltage (%Vn)	Reading on relay
100.0 V	67.74 V	1.0

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date 27/12/08	Signature	Date	Signature	Date

Schneider Electric

FACTORY TEST REPORT # 4.8

Customer	:	IEC	Panel Description	:	110/13.5KV AVC PNL
Primary Station	:	IC74	Panel Ref. No.	:	FWJ01
Manufacturer	:	ABB	Equipment Description	:	190
Type	:	SPAU 341 C1	Tag No.	:	001
Serial No.	:	632575	Year of manufacture	:	
			Room temperature	:	

Current measurement: 1.0A = 1.0A

Injected Current (A)	Reading on relay
1.0A	1.0

3. REGULATING VALUE TEST: 100V

Scale Setting Un%	Pick up Voltage ΔU = 5 %				Balance
	Raise		Lower		
	Expected	Actual	Expected	Actual	
5.0V	95.0V	94.9	105.0V	105.7	100.3

Range setting: 0.85 – 1.15 Vn RAISE – CONTACT – OK LOWER CONTACT – OK

4. DEGREE OF SENSIVITY TEST: ΔU = 1.5%

Scale Setting ΔU %	Pick up Voltage Un = 100 %				Band Width V	Band Width
	Raise		Lower			
1.5%	98.5	98.4	101.5	101.6	1.6	1.6

Range of setting : 0.6% - 9%

5. UNDER VOLTAGE BLOKING TEST: 70 VOLTS

Scale Setting Vn%	PICK UP	RESET
70% OF 100 = 70V	69.8V	69.95

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date 27/12/08	Signature	Date	Signature	Date
[signature] R. Jose				[signature, stamp]	

FTF -AVC	REVISION : 0	08/06/08

Schneider Electric

FACTORY TEST REPORT # 4.8

Customer	: SEC	Panel Description	: 4,0/13.8 kV AVR PNL
Primary Station	: 1674	Panel Ref. No.	: +WV01
Manufacturer	: ABB	Equipment Description	: 140
Type	: VPAV 342 01	Tag No.	: 001
Serial No.	: 636875	Year of manufacture	:
		Room temperature	:

6. OVER CURRENT BLOCKING TEST: 1.5 AMPS

Scale Setting In%	PICK UP	RESET
1.50% OF I = 1.50A	1.501 A	1.49 A

7. OVER VOLTAGE BLOKING TEST: 125.0 V

Scale Setting Vn%	PICK UP	RESET
1.25% OF 100 = 125V	125.19 V	125.03

Range of setting: 1.05 – 1.25

8. TEST OF R COMPENSATION:

Settings: X = 0 ΔUs = 1.5 Ur = 5.0 Us = 100 x Un Phase Angle = 0

CURRENT (A)	EXPECTED READING (V)		ACTUAL READING (V)	
	Raise	Lower	Raise	Lower
0			98.14	102.09
0.25			96.80	100.68
0.5			95.78	99.64
0.75			94.47	98.09
1			92.80	96.74

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date 27/12/08	Signature	Date	Signature	Date

Schneider Electric

FACTORY TEST REPORT # 4.8

Customer	: VEC	Panel Description	: 110/13.5 KV AVC PNL
Primary Station	: 1014	Panel Ref. No.	: +WJ01
Manufacturer	: ABB	Equipment Description	: 190
Type	: VR94 341 C1	Tag No.	: 001
Serial No.	: 634575	Year of manufacture	:
		Room temperature	:

Settings: X = 0 ΔUs = 1.5 Ur = 5.0 Us = 100 x Un Phase Angle = 180

CURRENT (A)	EXPECTED READING (V)		ACTUAL READING (V)	
	Raise	Lower	Raise	Lower
0			97.42	101.96
0.25			99.02	103.02
0.5			100.82	104.54
0.75			101.45	105.82
1			103.01	106.32

9. TEST OF X COMPENSATION:

Settings: R = 0 ΔUs = 1.5 Ux = 5.0 Us = 100 x Un Phase Angle = 90

CURRENT (A)	EXPECTED READING (V)		ACTUAL READING (V)	
	Raise	Lower	Raise	Lower
0			98.35	102.07
0.25			96.83	100.73
0.5			95.58	99.45
0.75			94.32	98.27
1			93.27	96.83

TESTED BY		TEST WITNESSED BY		TEST WITNESSED BY	
Signature	Date 27/12/08	Signature	Date	Signature	Date
R. NIE					