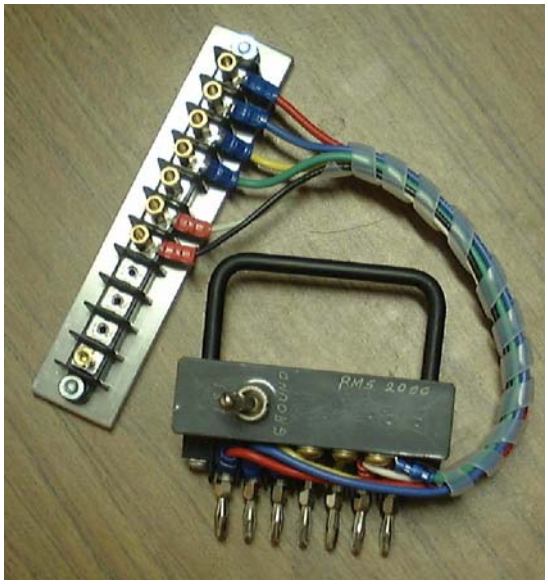
SIEMENS

TEST PROCEDURE FOR THE RMS-2000 PROGRAMMABLE LOGIC CONTROLLER USING AN AMPTECTOR SECONDARY TEST SET.



The Amptector Adapter Plug, shown above, is available from WESTRIP to facilitate the testing of the RMS-2000 on the Amptector Test Set.

1. Using the Amptector Adapter Plug, connect to the test set wiring harness to the logic box to be tested.
2. Verify the "CURRENT ADJUST" control setting is on the minimum setting and turn on the "Test Set".
3. Reset the "Trip Timer".
4. The Adapter Plug contains a toggle switch that allows the LSI and LSIG Logic's to be tested. On the LSI logic the switch must be set to LSI. The LSIG logic can be tested on all functions except for "GROUND". Set the Adapter Plug switch to the "Ground" setting when testing the "GROUND" function.
5. After testing a selected pick-up current or delay function, it is advised that the "CURRENT ADJUST" control be returned to zero before proceeding to the next test.
6. When testing pick-up currents, start by selecting the "LO AMP" range. With the "CURRENT ADJUST" at zero, turn clockwise until the unit trips or the pick-up light on the logic turns on. If the logic controller does not trip at this setting, return the "CURRENT ADJUST" to zero and select "HI AMP" range and proceed with the test.
7. Testing of each function is described in more detail on the following pages.

The "Sample Test Chart" below gives a basic layout for recording the results of the test performed on a Logic Control. The form can be used when testing on secondary or primary.

NOTE: When testing with the Logic on the Breaker, it may not be possible to trip the Latch and the Test Set Timer at the same time. To test the timing it may be necessary to remove the Actuator wiring.

SAMPLE TEST CHART

DATE: ____/____/____

LOGIC SERIALNUMBER: _____

LONG TIME FUNCTION:

SWITCH SETTING _____ AMP TAP _____ PICKUP CURRENT _____

DELAY SETTING _____ TEST CURRENT_____ ELAPSED TIME A_____ B_____ C_____

SHORT TIME FUNCTION:

SWITCH SETTING _____ AMP TAP _____ PICKUP CURRENT _____

DELAY SETTING _____ TEST CURRENT_____ ELAPSED TIME A_____ B_____ C_____

INSTANTANEOUS FUNCTION:

SWITCH SETTING _____ AMP TAP _____ PICKUP CURRENT _____

TEST CURRENT_____ ELAPSED TIME A_____ B_____ C_____

GROUND FAULT FUNCTION:

SWITCH SETTING _____ PICKUP CURRENT _____

DELAY SETTING _____ TEST CURRENT_____ ELAPSED TIME A_____ B_____ C_____

LONG TIME FUNCTION TESTING

PICK-UP TEST

1. Select the Phase to be tested. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set the 'LONG TIME' Delay switch to '2' and the 'LONG TIME' Pick up switch to the test point.
3. Start the "Test Set" and slowly increase the "CURRENT ADJUST" from "0" until the 'PICK-UP' LED on the logic turns on. The "PICK-UP" Light on the Test Set does not function with the WESTRIP RMS-2000.
4. Record the "AMPERE" reading just as the pick-up LED lights. Compare the reading to that of Chart 2A. The reading should be within +/- 10% of the stated value.
5. Return "CURRENT ADJUST" control to "0". Repeat for other phases or pick-up settings if desired.

LONG TIME DELAY

1. Select the Phase to be tested. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set the 'LONG TIME' Delay switch to the desired setting; '2', '3', '4', '5', '7', '10', '12', '15', '20', or '24'. These settings are referenced to a current level equal to 600% of the 'LONG TIME' Pick-Up. Actual delays can vary in accordance with the 'Time vs. Current Characteristic' curves. If a current level of 200% or 300% is used, refer to the table below for the corresponding timing range.
3. After the logic is adjusted, set the test current to the desired level, i.e. 300% of the long time pick-up switch setting. Stop the test and make certain the timer is reset.
4. Restart the 'Test Set' and let run until the logic trips and the "TIMER" stops. The timer should indicate the elapsed time. Compare this time to that of the Chart 1A below or the trip curves. Repeat for other phases or switch settings if desired.
5. Return the "CURRENT ADJUST" to "0".

Chart 1A – Long Time Delay

		Test Current Level					
		200%		300%		600%	
		Low Side	High Side	Low Side	High Side	Low Side	High Side
Delay Setting	2	14.4	21.6	6.4	9.6	1.6	2.5
	3	21.6	32.4	9.6	14.4	2.4	3.8
	4	28.8	43.2	12.8	19.2	3.2	5.0
	5	36	54	16	24	4	6.3
	7	50.4	75.6	22.4	33.6	5.6	8.8
	10	72	108	32	48	8	12.5
	12	86.4	129.6	38.4	57.6	9.6	15
	15	108	162	48	72	12	18.8
	20	144	216	64	96	16	25
	24	172.8	259.2	76.8	115.2	19.2	30

*Time in Seconds

Chart 2A – Long Time Pick-up Currents

		LONG TIME PICK UP						
		.4	.5	.6	.7	.8	.9	1.0
Amp Tap	.5	1.00	1.25	1.5	1.75	2.00	2.25	2.50
	.6	1.20	1.50	1.80	2.10	2.40	2.70	3.00
	.7	1.40	1.75	2.10	2.45	2.80	3.15	3.50
	.8	1.60	2.00	2.40	2.80	3.20	3.60	4.00
	.9	1.80	2.25	2.70	3.15	3.60	4.05	4.50
	1.0	2.00	2.50	3.00	3.50	4.00	4.50	5.00

SHORT TIME FUNCTION TESTING

PICK-UP TEST

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set 'SHORT TIME' Delay switch to '.15' and adjust the 'SHORT TIME' Pick up switch to the test point.
3. Start the "Test Set" and slowly increase the "CURRENT ADJUST" from "0" until the logic trips.
4. Record the "AMPERE" reading at the moment the trip occurs. Compare the reading to the value found in Chart 2B. The reading should be within +/- 10% of the stated value. Repeat for other phases or pick-up settings if desired.
5. Return the "CURRENT ADJUST" to "0".

SHORT TIME DELAY

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set the 'SHORT TIME' Delay switch to the desired setting; '.1', '.15', '.2', '.25', '.3', '.35', '.4', '.45', '.5', or 'I^2T'.
3. Start the "Test Set" and set the test current to a level that is 150% of the 'SHORT TIME' Pick-up current. In order to perform this step, the 'SHORT TIME' and 'INSTANTANEOUS' pick-up switch on the logic box must be set to its maximum setting to prevent tripping. Once the "CURRENT ADJUST" control is set, place the 'SHORT TIME' Pick-up switch to the test setting. Stop the test and make certain the timer is reset.
4. Restart the 'Test Set' and let run until the logic trips and the "TIMER" stops. The timer should indicate the elapsed time. Compare this time to that of the Chart 1B below or the trip curves. Repeat for other phases or switch settings if desired.
5. Return the "CURRENT ADJUST" to "0".

Chart 1B – Short Time Delay

		Test Current Level	
		150%	
		Low Side	High Side
Delay Setting	.1	65	100
	.15	98	150
	.2	130	200
	.25	163	250
	.3	195	300
	.35	228	350
	.4	260	400
	.45	293	450
	.5	325	500
	**I^2T	.58 Sec.	.90 Sec.

*Time in milliseconds

**I^2T Test Settings: 'AMP TAP' = '1.0', 'SHORT TIME' = '2', Test current = 15A.

Chart 2B – Short Time Pick-up Currents

		SHORT TIME PICK UP									
		1.5	2	3	4	5	6	7	8	9	10
Amp Tap	.5	3.75	5.00	7.50	10.0	12.5	15.0	17.5	20.0	22.5	25.0
	.6	4.50	6.00	9.00	12.0	15.0	18.0	21.0	24.0	27.0	30.0
	.7	5.25	7.00	10.5	14.0	17.5	21.0	24.5	28.0	31.5	35.0
	.8	6.00	8.00	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0
	.9	6.75	9.00	13.5	18.0	22.5	27.0	31.5	36.0	40.5	45.0
	1.0	7.50	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0

INSTANTANEOUS FUNCTION TESTING

PICK-UP TEST

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Set 'INSTANTANEOUS' Pick up switch to the test point.
3. Start the "Test Set" and slowly increase the "CURRENT ADJUST" from "0" until the logic trips.
4. Record the "AMPERE" reading at the moment the trip occurs. Compare the reading to the value found in Chart 2C. The reading should be within +/- 10% of the stated value. Repeat for other phases or pick-up settings if desired.
5. Return the "CURRENT ADJUST" to "0".

INSTANTANEOUS DELAY

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test.
2. Start the "Test Set" and set the test current to a level that is 150% of the 'INSTANTANEOUS' Pick-up current. In order to perform this step, the 'SHORT TIME' and 'INSTANTANEOUS' pick-up switch on the logic box must be set to its maximum setting to prevent tripping. Once the "CURRENT ADJUST" control is set, place 'INSTANTANEOUS' Pick-up switch to the test setting. Stop the test and make certain the timer is reset.
3. Restart the 'Test Set' and let run until the logic trips and the "TIMER" stops. The timer should indicate the elapsed time. Compare this time to that of the Chart 1C below or the trip curves. Repeat for other phases or switch settings if desired.
4. Return the "CURRENT ADJUST" to "0".

Chart 1C – Instantaneous Delay

Set Secondary Current	No More Than
To 150% of Chart 2C	.06 Sec

Chart 2C – Instantaneous Pick-up Currents

		INSTANTANEOUS PICK UP									
		2	3	4	5	6	7	8	9	10	12
Amp Tap	.5	5.00	7.50	10.0	12.5	15.0	17.5	20.0	22.5	25.0	30.0
	.6	6.00	9.00	12.0	15.0	18.0	21.0	24.0	27.0	30.0	36.0
	.7	7.00	10.5	14.0	17.5	21.0	24.5	28.0	31.5	35.0	42.0
	.8	8.00	12.0	16.0	20.0	24.0	28.0	32.0	36.0	40.0	48.0
	.9	9.00	13.5	18.0	22.5	27.0	31.5	36.0	40.5	45.0	54.0
	1.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	60.0

GROUND FAULT FUNCTION TESTING

PICK-UP

1. Set the Adapter Plug switch to the "GROUND" setting.
2. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test. Setup the wiring per 'Drawing 3' on page 8.
3. Set 'GROUND FAULT' Delay switch to '.15' and adjust the 'GROUND FAULT' Pick up switch to the test point.
4. Start the "Test Set" and slowly increase the "CURRENT ADJUST" from "0" until the logic trips.
5. Record the "AMPERE" reading at the moment the trip occurs. Compare the reading to the value found in Chart 2D. The reading should be within +/- 10% of the stated value. Repeat for other phases or pick-up settings if desired.
6. Return the "CURRENT ADJUST" to "0".

GROUND DELAY

1. Select the Phase to be tested and set the 'LONG TIME' Delay switch to '24'. Make certain all other functions are adjusted so as not to interfere with the selected test. Verify that "Ground Fault" testing is enabled.
2. Set the 'GROUND FAULT' Delay switch to the desired setting; '.1', '.15', '.2', '.25', '.3', '.35', '.4', '.45', '.5'.
3. Start the "Test Set" and set the test current to a level that is 300% of the 'GROUND FAULT' Pick-up current. In order to perform this step, the 'GROUND FAULT' pick-up switch on the logic box must be set to its maximum setting to prevent tripping. Once the "CURRENT ADJUST" control is set, place the 'GROUND FAULT' Pick-up switch to the test setting. Stop the test and make certain the timer is reset.
4. Restart the 'Test Set' and let run until the logic trips and the "TIMER" stops. The timer should indicate the elapsed time. Compare this time to that of Chart 1D below or the trip curves. Repeat for other phases or switch settings if desired.
5. Return the "CURRENT ADJUST" to "0".

Chart 1D – Ground Fault Delay

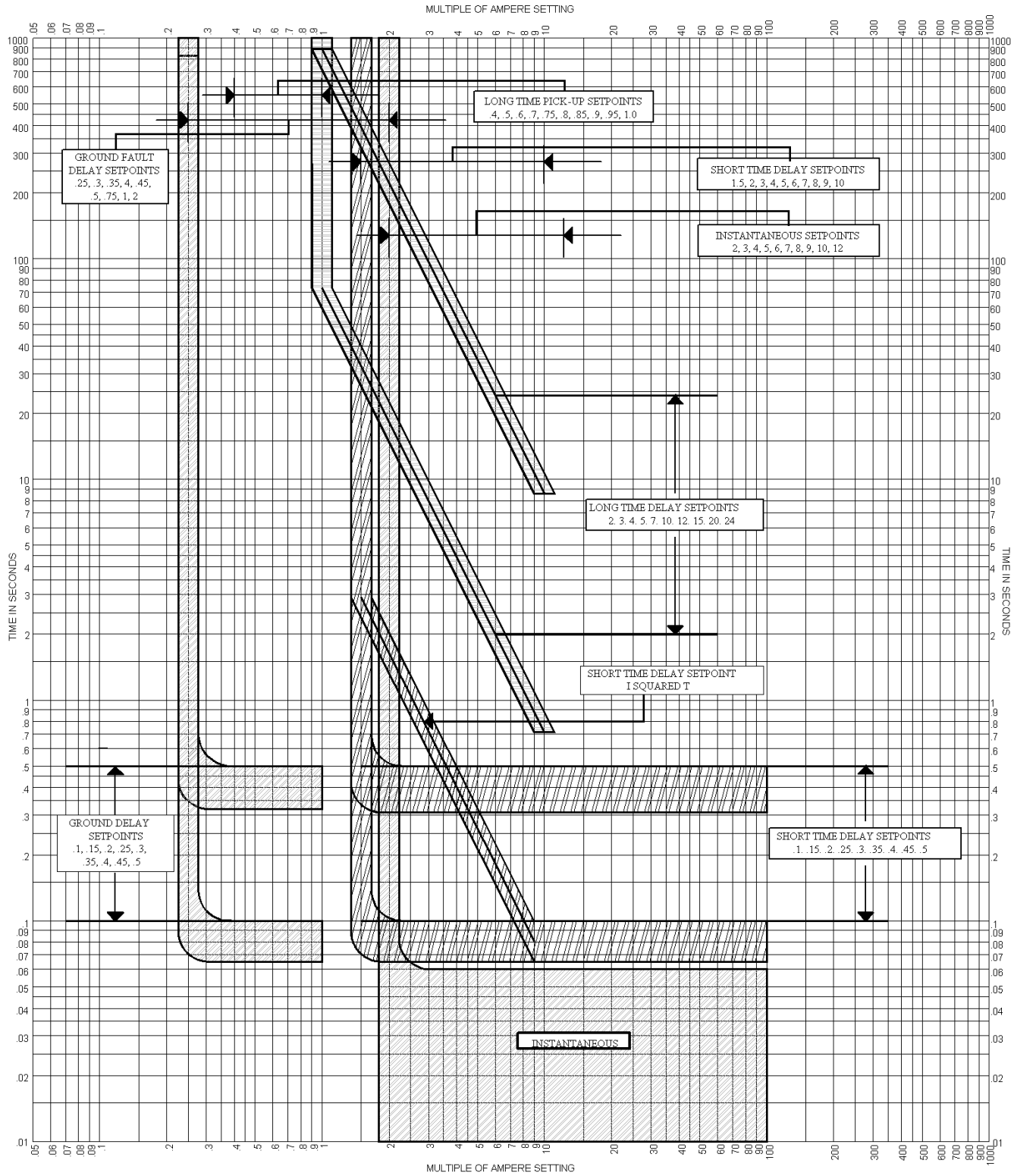
		Test Current Level	
		300%	
		Low Side	High Side
Delay Setting	.1	65	100
	.15	98	150
	.2	130	200
	.25	163	250
	.3	195	300
	.35	228	350
	.4	260	400
	.45	293	450
	.5	325	500

*Time in milliseconds

Chart 2D – Ground Fault Pick-up Currents

GROUND FAULT PICK UP									
.25	.3	.35	.4	.5	.6	.75	1.0	2.0	Defeat
1.25	1.50	1.75	2.00	2.50	3.00	3.75	5.00	10.0	No Trip

NOTE – 'GROUND FAULT' Pick ups not affected by 'AMP TAP' setting.



WESTRIP RMS-2000 PROGRAMMABLE LOGIC CONTROL Rev.02 TIME-CURRENT CHARACTERISTIC CURVES

FOR **WESTRIP** DATED **OCTOBER 10, 2005**

STANDARD DEVIATION **FOR AMPERE SETTING IS +/- 10%**