APPENDIX B
Teacher’s Manual and Computer Assisted Instruction (CAI)

B1: Teacher’s Manual of the computer assisted Implementation (CAI) title “Multi-Meter” for tenth grade students

B2: Computer Assisted Instruction (CAI) title “Multi-Meter” for tenth grade students
APPENDIX B: 1
Teacher’s Manual of the computer assisted Implementation (CAI)
title “Multi-Meter”

Explanation for Instructor:

Computer Assisted Instruction (CAI) title “Multi-Meter” was constructed in order to use as supplement for teaching in career and technology subject (learning substance: electronic) for tenth grade students. The objectives of this computer assisted Implementation (CAI) title “Multi-Meter” are as follow:

1. To use as the instructional material presented by computer
2. To use as a learning medium that utilize computer to instruct the students in career and technology subject (learning substance: electronic) for tenth grade students focusing on self-study
3. To use for students to review the course content
4. To use as a substitute in case instructor is absent
5. To use as a reliable tool for instructor’s facilitator
6. To increase the effectiveness of learning achievement because the programme can be allocated to every students in class
7. To motivate and stimulate students to learn inside and outside of class
8. To enhance student’s critical thinking skills and analytical thinking skills
9. To use as a test in order to evaluate student’s knowledge and understanding (Since the students are tested (pretest-posttest) and practice according to the worksheet insert in the CAI programme) The score can reported to instructor automatically.

Role of Instructor:

1. Prepare the learning management plan before time and provide the learning material/learning medias
2. Practice CAI before demonstrate to the students in the class
3. Follow, observe, notice the instruction, help students to solve problems
4. Keep record of individual student and encourage them for the higher level of learning achievement
5. Inform and demonstrate the learning standard, learning substance, and learning expectations on the projector and summarize each learning unit appropriately.

6. Prepare additional course materials in order to make the lesson fitting to real world situation and also to increase effectiveness of CAI.

**Recommendation for Instructor:**

Method of teaching through CAI, instructor has to change the roles from telling and knowledge transferring to helping, promoting and encouraging learners in acquiring knowledge from CAI in order to broaden the vision and give them more opportunity for self learning. The following would be a recommend for instructor in using CAI:

1. Enhance the students to focus on self-study. Reduce the role of instructor telling to asking students. Moreover, instructor should motivate them for further application
2. Pay attention to both clever and poor students
3. Motivate the students to improve the capability of technological skills
4. Encourage the students to learn by their own ability
5. Motivate the students to read the instructions before starting CAI and follow every instruction, activity, test, and evaluation within the CAI in order to receive maximum knowledge, skills/performance and desirable characteristics.

**Recommendation for Student:**

This CAI is use for student’s self study. It is a supplementation material for the career and technology subject. There is no time limit on learning from this CAI. Please read instructions and guidelines before start learning from the programme step-by-step.

1. Make understanding how to use CAI.
2. Improve the learning experience by self-learning and follow the instruction which demonstrate in this CAI.
3. Improve the skill by performing all worksheets in the CAI
4. Student must keep in mind self honest and be responsible.
5. This CAI composes of teaching frames and worksheets.
6. This CAI is not a part of examination. Student should study CAI frame-by-frame fully understanding and be able to perform all activities individually.
7. Before starting CAI, pretest must be completed in order to evaluate the basic knowledge. Once finish with the CAI there will be a posttest which must be completed in order to measure the gain knowledge, skills/performance acquisition.

8. Learn CAI from the first frame until finish the final frame. DO NOT skip any frame because you will gets confuse.

9. Read instructions and questions to your best understanding and think carefully. Once you are sure then finish the quiz in computer.

10. After finish one frame and finish the quiz, the answers can be view in order to check the ability. If the questions are done correctly, then continue to the next frame.

11. If the answer is incorrect do not skip, please go back to the lesson and read for more understanding. Once student understand the teaching unit fully then move on to the next unit.

12. Do not hurry to learn from CAI.

13. After all frames in CAI had been studied, the posttest should be done individually and after finishes do check for correct answers in order to evaluate the learning progress.

14. For the success of the best result learning from this computer assisted instruction. Student must follow the instructions and suggestions strictly, honest to self, have responsibility, and have discipline. Most of all, student should not look at the answers before doing the quiz or any test.

15. Don’t forget to turn off computer and clean up the desk every time after the class is over.
CLASSROOM ARRANGEMENT

The learning process using CAI must be operated in computer laboratory. Students must have their own computer and sit in the position according to this diagram.

Diagram of Classroom Arrangement
GUIDELINES FOR LEARNING PROCESS THROUGH CAI

In order to operate CAI, there are several guidelines to be follow:

1. Instructor must prepare CAI, computer laboratory ready before using it.
2. Students must have their own computer.
3. CAI must be installed in each computer.
4. Instructor must only be the students’ facilitator and only demonstrate students through computer projector. The students have to learn through CAI frame to frame and complete worksheet after each learning unit.
5. Instructor should motivate students to learn individually.
6. Instructor should guide students to turn off computer and clean up work area every time when the class is over.

Course Description:

Computer Assisted Instruction (CAI) title “Multi-Meter” divided into 5 units according to the learning management plan on career and technology subject (Learning substance: electronic) for tenth grade students. There are 45 frames in this CAI. The details of CAI frames included in the Computer Assisted Instruction (CAI) title “Multi-Meter” are as follow:

<table>
<thead>
<tr>
<th>Unit 1: Components of Multi-Meter (10 Frames)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame 1: Learning expectation of Unit 1</td>
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<tr>
<td>Frame 2: Definition of Multi-Meter</td>
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<tr>
<td>Frame 3: An effective Multi-Meter</td>
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<td>Frame 4: Components of Multi-Meter (inside of Multi-Meter)</td>
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<td>Frame 5: Components of Multi-Meter (outside of Multi-Meter)</td>
</tr>
<tr>
<td>Frame 6 - 7: Components of scale and monitor of Multi-Meter</td>
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<td>Frame 8: Caution of using Multi-Meter</td>
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<td>Frame 9: Quiz Unit 1</td>
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<tr>
<td>Unit 2: Ohm-Meter measurement (11 Frames)</td>
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<tr>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Frame 11: Learning expectation of Unit 2</td>
</tr>
<tr>
<td>Frame 12: Definition of Ohm-Meter</td>
</tr>
<tr>
<td>Frame 13: Steps of using Ohm-Meter</td>
</tr>
<tr>
<td>Frame 14: Reading Ohm-Meter scale</td>
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<tr>
<td>Frame 20: Quiz Unit 2</td>
</tr>
<tr>
<td>Frame 22: Worksheet Unit 2</td>
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</tbody>
</table>

<table>
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<tr>
<th>Unit 3: Alternating Current Volt-Meter (ACV) measurement (11 Frames)</th>
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<td>Frame 22: Learning expectation of Unit 3</td>
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<td>Frame 23: Definition of Alternating Current Volt-Meter (ACV)</td>
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<tr>
<td>Frame 24: Steps of using Alternating Current Volt-Meter (ACV) measurement</td>
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<tr>
<td>Frame 25: Reading Alternating Current Volt-Meter (ACV) scale</td>
</tr>
<tr>
<td>Frame 26 – 30: Demonstrate of reading Alternating Current Volt-Meter (ACV) scale</td>
</tr>
<tr>
<td>Frame 31: Quiz Unit 3</td>
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<tr>
<td>Frame 32: Worksheet Unit 3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unit 4: Direct Current Volt-Meter (DCV) measurement (13 Frames)</th>
</tr>
</thead>
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<tr>
<td>Frame 33: Learning expectation of Unit 4</td>
</tr>
<tr>
<td>Frame 34: Definition of Direct Current Volt-Meter (DCV)</td>
</tr>
<tr>
<td>Frame 35: Steps of using Direct Current Volt-Meter (DCV) measurement</td>
</tr>
<tr>
<td>Frame 36: Reading Direct Current Volt-Meter (DCV) scale</td>
</tr>
<tr>
<td>Frame 37 – 43: Demonstrate of reading Direct Current Volt-Meter (DCV) scale</td>
</tr>
<tr>
<td>Frame 44: Quiz Unit 4</td>
</tr>
<tr>
<td>Frame 45: Worksheet Unit 4</td>
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</tbody>
</table>
Unit 5: Measuring of DCmA (10 Frames)

| Frame 46: Learning expectation of Unit 5 |
| Frame 47: Definition of DCmA |
| Frame 48: Steps of using DCmA |
| Frame 49: Reading DCmA scale |
| Frame 50–53: Demonstrate of reading DCmA scale |
| Frame 54: Quiz Unit 5 |
| Frame 55: Worksheet Unit 5 |

Appendices

| Pretest-Posttest |
| Worksheet |
| Answer Key |

Time requirement: Instructor should spend at least 10 hours to supplement this CAI in the course.

Learning Equipment Preparation:

1. Windows 95, 98, Me, NT 4, 2000, or XP
2. Computer must have CPU with 300 MHz or more and must have 32 MB of RAM (windows 95/98/Me) or 64 MB of RAM (windows NT/2000/XP)
3. 800 x 600 resolution or higher
4. Hard disk should space of 40 MB
5. CD-ROM drive reader
6. System sound checking
7. Students should have basic minimum skill requirement about computer operation knowledge or must be able to use mouse as a minimum requirement.
A computer-assisted instruction (CAI) system is shown, with an image of a multimeter and a menu listing options such as "Course Introduction," "Start CAI Course," "Pre-Test," "Post-Test," and "Author."
How to use Multi-Meter

Enter your name and surname: 

Choose the correct answer from a, b, c, or d

1) What instrument is designed for several functions of electric measurement?
   a. Volt-Meter
   b. Ohm-Meter
   c. Amp-Meter
   d. Multi-Meter

   a Circle b Circle c Circle d Circle

2) What is the purpose of the utilization of Multi-Meter?
   a. Measure DC circuit
   b. Measure AC circuit
   c. Measure electric circuits
   d. Measure electrical quantities (Volts, Amps and Ohms)

   a Circle b Circle c Circle d Circle

Score Reports

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Right Answers: 2 / 20
You got 10 %

Try Again!
Multi-Meter is a measuring tool that can measure any form of electricity such as voltage, AC voltage, electricity power, and resistance.

A good multi-meter should be able to measure high electricity power rapidly. This means the multi-meter must measure the electricity accurately. Normally, a good multi-meter can measure DC current at 20 kilo ohms per volt and AC current at 9 kilo ohms per volt. The measurement unit from multi-meter will read is ohm per volt.
Component inside of Multi-Meter
1. Electric cell 1.5 volt per 2 series
2. 9 voltage battery
3. 250 volt 0.5 ampere fuse
4. Back up fuse
5. Circuit board

Component outside of Multi-Meter
1. Adjustment screw for setting scale to 0 volt
2. Meter needle
3. Scale
4. LED
5. Measurement switch
6. Button to set ohm to 0
7. + connector (+)
8. – connector (- COM)
9. Output connector (OUTPUT)
10. Glass panel
11. Multi-Meter case
Component of Scale

1. Scale for reading electrical resistance
2. Scale for reading AC and DC current
3. Scale for reading electrical value 0
4. Scale for reading AC current at 2.5 V
5. Scale for reading hFE
6. Scale for reading dB
7. Scale for reading LV when setting the scale to ohm
8. Scale for reading LI when setting the scale to ohm
9. Scale for reading test battery
10. Glass panel
11. Indicated LED light when Multi-Meter is in use

Measuring Ohm

There are 4 ways we can use Multi-Meter to measure electrical current

1. Measuring A.C. Voltage with the range of 2.5, 10(+12 dB), 50 (+26 dB), 250 (+40 dB), and 1000 (+52 dB)
2. Measuring Ohm with the range of Rx 1, Rx 10, Rx 100, Rx 1k, and Rx 10k
3. Measuring D.C. current with the range of milliamp 2.5, 25, and 250 (0.25A)
4. Measuring D.C. Voltage with the range 0.1, 0.5, 2.5, 10, 50, 250, and 1000
Caution when using multi-meter:

1. Be careful when using multi-meter do not drop or crash it on the floor because it will be broken.
2. Multi-meter must be place in the horizontal landscape while using it.
3. Before starts measuring make sure that you select the right measuring range.
4. Placing the scale to the highest range when measuring the unknown current.
5. Do not using Ohm measuring scale to measure A.C. or D.C.
6. When measuring D.C. current makes sure that you are using + - terminal correctly.
7. When selecting to measure Ohm do not let the terminal touch each other for long time.
8. When finishing using the multi-meter make sure to turn off the device and unplug electrical cord.
9. Never so often overload the multi-meter when measuring the electricity.
10. Multi-meter that's not in use very often before use you must turn function and range switch back and forth in order to make sure that it can function properly.
11. Always place multi-meter in its' case.

Quiz

1) Multi-meter uses what kind of measuring scale to measure electricity?
   a) Moving Coil
   b) Digital
   c) Suspension
   d) Electronic dynamic meter

2) There are how many measuring range in multi-meter
   a) 1
   b) 2
   c) 3
   d) 4

3) How fast can multi-meter measure?
   a) 16 Ohm per volt
   b) 56 Ohm per volt
   c) 8 Kilo Ohm per volt
   d) 26 Kilo Ohm per volt

4) Which scale range can be use together?
   a) Ohm, DC Amp
   b) Ohm, DC Volt
   c) DC Amp, DC Volt
   d) AC Volt, DC Volt

5) Which one is part of caution statement for using multi-meter?
   a) Top connect while measuring electricity
   b) Parallel connect while measuring electricity
   c) Set the right measuring range always when using multi-meter
   d) Remove battery every time after use
Score Reports

Correct Answers: 0 of 5 questions
Question answered incorrectly: 1, 2, 3, 4, 5
Result: 0 %

Try Again!

Back  Correct Answer
Worksheet Unit 1

Give the definition of Multi-Meter and describe the components of Multi-Meter
(5 Score)
Learning Objectives:

1. Be able to read and understand Ohm meter
2. Can connect Ohm meter to circuit correctly
3. Be able to explain how to use Ohm meter correctly
4. Be able to read resistant from the scale correctly

Ohm meter is a meter created in order to measure various resistant using the symbol R by reading the value into Ohm.

There are 5 measuring range which is x1, x10, x100, x1k, and x10k. It can read resistant starting from 2 Kilo Ohm until 20 Mega Ohm.
Using Ohm meter step-by-step:

1. Set in Ohm range.
2. Connect red measuring cord to + terminal and black measuring code to – terminal (-COM).
3. Arrange selector switch to the correct measuring range.
4. Before using Ohm meter you must always set Ohm value to 0.
5. If you are using Ohm meter to measure resistant in the circuit, you must make sure to turn the switch off every time.
Using Ohm meter step-by-step:

1. Set in Ohm range.
2. Connect red measuring cord to + terminal and black measuring code to – terminal (COM).
3. Arrange selector switch to the correct measuring range.
4. Before using Ohm meter you must always set Ohm value to 0.
5. If you are using Ohm meter to measure resistant in the circuit, you must make sure to turn the switch off every time.

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Reading Ohm meter scale:

<table>
<thead>
<tr>
<th>Measuring Range</th>
<th>Scale Reading</th>
<th>Using Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>x1</td>
<td>Direct reading</td>
<td>0–2 Kilo Ohm</td>
</tr>
<tr>
<td>x10</td>
<td>x10</td>
<td>0–20 Kilo Ohm</td>
</tr>
<tr>
<td>x100</td>
<td>x100</td>
<td>0–200 Kilo Ohm</td>
</tr>
<tr>
<td>x1k</td>
<td>Direct reading in Kilo Ohm</td>
<td>0–2 Mega Ohm</td>
</tr>
<tr>
<td>x10k</td>
<td>x10 in Kilo Ohm</td>
<td>0–20 Mega Ohm</td>
</tr>
</tbody>
</table>
Example measuring x1
Resistant = value reads from scale x measuring range
Example:
Scale reads 14
14 x 1 = 14 Ohm
How to use Multi-Meter
Unit 2: Ohm-Meter measurement.

Move your mouse to resistant to read the scale

Example measuring x10
Resistant = value reads from scale x measuring range

Example:
Scale reads 8.5
8.5 x 10 = 85 Ohm
Example measuring x100

Resistance = value reads from scale x measuring range

Example:
Scale reads 1.6
1.6 x 100 = 160 Ohm

Example measuring x1k

Resistance = value reads from scale x measuring range

Example:
Scale reads 70
70 x 1k = 70 Kilo Ohm or 70,000 Ohm
26 X 10K = 260 Kilo Ohm

Example measuring x10k
Resistor = value reads from scale x measuring range

Example:
Scale reads 9.5
9.5 x 10k = 95 Kilo Ohm or 95,000 Ohm
Quiz

1) Meter must be set before use every time when you are measuring what value?
   - a) Electricity power
   - b) Voltage
   - c) Electrical current
   - d) Resistance

2) Which reading scale is not in the form of linear?
   - a) Amp meter
   - b) Ohm meter
   - c) Volt meter
   - d) Watt meter

3) Which electrical device utilizes battery as a source of power?
   - a) Volt meter
   - b) Amp meter
   - c) Ohm meter
   - d) Watt meter

4) Scale point to 10 and switch set to Rx10 what is the resistant?
   - a) 10 Ohm
   - b) 100 Ohm
   - c) 20 Ohm
   - d) 200 Ohm

5) Scale point to 10 and switch set to Rx10K what is the resistant?
   - a) 330 Ohm
   - b) 33Kilo Ohm
   - c) 18Kilo Ohm
   - d) 20Kilo Ohm

Score Reports

Correct Answers: 1 of 5 questions
Question answered incorrectly: 2, 3, 4, 5

Result: 20 %

Try Again!
Worksheet Unit 2

Give the definition of Ohm-Meter and describe the step of using Ohm-Meter (5 Score)
Using AC volt meter step-by-step:

1. Connect AC volt while measuring electrical pressure cross parallel with load.
2. Set range meter to ACV.
3. Adjust switch of measuring range to the right position. If you don’t know what’s the value you want to read then you should set the value to maximum (1,000V) before lowering the value accordingly. You should lower the value until the reading is close to the actual value.
4. Before using meter to measure high voltage you must turn off switch first.
5. Do not touch measuring terminal or cord while measuring high electric voltage. When finish with measuring turn off switch of the circuit before removing the measuring terminal.
### Table: Measuring Range and Reading Value

<table>
<thead>
<tr>
<th>Scale</th>
<th>Measuring Range</th>
<th>Reading Value</th>
<th>Using Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0~10</td>
<td>10V, 1,000V</td>
<td>Direct Reading</td>
<td>0<del>10V, 0</del>1,000V</td>
</tr>
<tr>
<td>0~50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0~250</td>
<td>50V, 250V</td>
<td>Direct Reading</td>
<td>0~250V</td>
</tr>
<tr>
<td>0~2.5</td>
<td>2.5V</td>
<td>Direct Reading</td>
<td>0~2.5V</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0~1000V</td>
</tr>
</tbody>
</table>

## Example measuring 2.5
Reading scale from 0~2.5 (AC 2.5 V) red dot
Resistant = value reads from scale

**Example:**
- Scale reads 2
- Voltage value is 2 volt.

### Diagram:
- 0.5 = 0.5 Volt
- Move your mouse to the red dot to read electrical voltage.
Example measuring 10
Reading scale from 0'10
Resistant = value reads from scale

Example:
Scale reads 7.5
Voltage value is 7.5 volt.

Example measuring 50
Reading scale from 0'50
Resistant = value reads from scale

For example:
Scale reads 12
Voltage value is 12 volt.
Example measuring 250
Reading scale from 0.250
Resistant = value reads from scale.
Example:
Scale reads 120
Voltage value is 120 volt.

Example measuring 1000
Reading scale from 0.100
Resistant = value reads from scale.
Example:
Scale reads 2.2
Voltage value is $2.2 \times 1000 = 220$ volt.
Quiz

1) How fast is the measuring of AC voltage?
   a) 50 Ω/Å
   b) 8 Ω/Å
   c) 10 kΩ/Å
   d) 20 kΩ/Å

2) How to set multi-meter to measuring AC voltage?
   a) Amp meter
   b) Ohm meter
   c) DC volt meter
   d) AC volt meter

3) Scale point to 2 and switch at 10 VAC what is the voltage value?
   a) 1 Volt
   b) 2 Volt
   c) 3 Volt
   d) 4 Volt

4) Scale point to 6 and switch at 50 VAC what is the voltage value?
   a) 10 Volt
   b) 20 Volt
   c) 30 Volt
   d) 40 Volt

5) Scale point to 200 and switch at 250 VAC what is the voltage value?
   a) 150 Volt
   b) 260 Volt
   c) 325 Volt
   d) 250 Volt

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Score Reports

Correct Answers: 4 of 5 questions
Question answered incorrectly:

Result: 80%  
Very Good!

Next  Correct Answer
Worksheet Unit 3

Give the definition of AC Volt-Meter and describe the step of using AC Volt-Meter

(5 Score)
Learning Objective:

1. Be able to read and understand DC volt meter
2. Can connect DC volt meter to circuit correctly
3. Be able to explain how to use DC volt meter correctly
4. Be able to read DC voltage from the scale correctly

DC Volt meter is a kind of meter that measure DC voltage. Measuring DC voltage user must connect DC volt meter cross parallel with the load needed to measure pressure. Terminal of DC volt meter that will be connecting must have the same pressure which will fall across the load. Follow the following method if the load is close to + then use + if the load is close to − then use −. This mean if the pressure is close to + then use + terminal and if it is close to − then use − terminal. DC volt meter has 7 range of measuring including 0.1V, 0.5V, 2.5V, 10V, 50V, 250V, and 1,000V. There are 3 scales including 0’10V, 0’50V, and 0’250V.
Using DC volt meter step-by-step:

1. Connect DC volt while the value is cross parallel with the load.
2. Position measuring range to DCV
3. Adjust value of measuring range correctly. If you don’t know the range of measuring range, then adjust to the highest value (1,000V) and lower the value as you trying to measure.
4. If trying to measuring DC voltage and the indication do not move, but when touching + terminal or removing + terminal and indicator move a little bit, then you are positioning the measuring range incorrect. It could be that the measuring range is still ACV.
5. Measuring the circuit you must connect the terminal correctly. By connecting – terminal (-COM) which has a black color cord and connecting + terminal which has a red color.
Using DC volt meter step-by-step:

1. Connect DC volt while the value is cross parallel with the load.
2. Position measuring range to DCV.
3. Adjust value of measuring range correctly. If you don’t know the value of measuring range then adjust to the highest value (1.000V) and lower the value as you trying to measure.
4. If trying to measuring DC voltage and the indication do not move, but when touching + terminal or removing + terminal and indicator move a little bit, then you are positioning the measuring range incorrect. It could be that the measuring range is still ACV.
5. Measuring the circuit you must connect the terminal correctly. By connecting – terminal (-COM) which has a black color cord and connecting + terminal which has a red color.

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<th>Using Range</th>
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<tbody>
<tr>
<td>0~10</td>
<td>0.1V 10V 1.000V</td>
<td>Direct Reading x 100</td>
<td>0<del>0.1V 0</del>10V 0~1000V</td>
</tr>
<tr>
<td>0~50</td>
<td>0.5V 50V</td>
<td>Direct Reading x 1</td>
<td></td>
</tr>
<tr>
<td>0~250</td>
<td>2.5V 250V</td>
<td>Direct Reading x 0.1</td>
<td>0<del>2.5V 0</del>250V</td>
</tr>
</tbody>
</table>
Example measuring 0.1
Reading scale from 0-10V
Resistant = value reads from scale

Example:
Scale reads 4
Voltage value is 4 x 0.01 = 0.04 volt.

Example measuring 0.5
Reading scale from 0-50V
Resistant = value reads from scale

Example:
Scale reads 20
Voltage value is 20 x 0.01 = 0.2 volt.
Move your mouse to the red dot to read electrical voltage.

Example measuring 2.5
Reading scale from 0.250V
Resistant = value reads from scale

Example:
Scale reads 75
Voltage value is 75 x 0.01 = 0.75 volt.
3 = 3 Volt

Move your mouse to the red dot to read electrical voltage.

Example measuring 10
Reading scale from 0-10V
Resistant = value reads from scale

Example:
Scale reads 7.5
Voltage value is 7.5 volt.
Example measuring 50
Reading scale from 0-50V
Resistance = value reads from scale

Example:
Scale reads 12
Voltage value is 12 volt.

Example measuring 50
Reading scale from 0-50V
Resistance = value reads from scale

Example:
Scale reads 120
Voltage value is 120 volt.
1) What's the tool to measure the electrical current?
   a) Ammeter
   b) Voltmeter
   c) Ohmmeter
   d) Wattmeter

2) How to connect Voltmeter?
   a) Series with load
   b) Parallel with load
   c) Series and parallel with load
   d) Series and parallel with supply

3) What is it that must be caution while measuring DCV?
   a) Connecting + and - terminal
   b) Connecting terminal cord to the meter
   c) Reading correct value from the right scale
   d) Using meter while measuring value

4) Scale point to 20 and switch at 10 VAC what is the voltage value?
   a) 5 V
   b) 10 V
   c) 40 V
   d) 100 V

5) Scale point to 6 and switch at 250 VAC what is the voltage value?
   a) 5 V
   b) 50 V
   c) 150 V
   d) 250 V
Give the definition of DC Volt-Meter and describe the step of using DC Volt-Meter (5 Score)
Learning Objective:

1. Be able to describe the meaning of DCmA meter
2. Can connect DCmA to circuit correctly
3. Be able to explain how to use DCmA correctly
4. Be able to read DCmA value from the scale correctly

DCmA or DCmilliamp meter is a meter which measure DC Current in order to tell how much current flowing through the circuit. Using DCmA measuring electric current in the circuit must cut the power from the power supply and connect DCmA to the circuit. The terminal must be connecting to the right place or else the value will repel and that could destroy the multi-meter.

There are 4 measuring range including 50 μA, 2.5mA, 25mA, and 0.25A and has 3 scales, but only use 2 reading scale including 0'50, and 0'250.
Using DCmA meter step-by-step:

1. Connecting DCmA meter to measure electric current must connect series with the load.
2. Position measuring range to DCmA range.
3. Adjust value of measuring range correctly. If you don’t know the value of measuring range then adjust to the highest value (0.25A) and lower the value as you trying to measure.
4. Before measuring the high electricity current you must turn off power from the circuit before start measuring.
5. Once finish with measuring you must turn off the circuit that you are measuring before removing the connecting terminal.
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<table>
<thead>
<tr>
<th>Scale</th>
<th>Measuring Range</th>
<th>Reading Value</th>
<th>Using Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>0~50</td>
<td>50µA</td>
<td></td>
<td>0~50µA</td>
</tr>
<tr>
<td>0~250</td>
<td>2.5mA</td>
<td>x0.01</td>
<td>0~2.5mA</td>
</tr>
<tr>
<td></td>
<td>25mA</td>
<td>x0.1</td>
<td>0~25mA</td>
</tr>
<tr>
<td></td>
<td>0.25A (250mA)</td>
<td>x0.001</td>
<td>0<del>0.25A (0</del>250mA)</td>
</tr>
</tbody>
</table>
Example measuring 50 μA
Reading scale from 0.50
Electrical value = value reads from scale

Example:
Scale reads 5
Voltage value is 5 μA

Example measuring 2.5
Reading scale from 0.250
Electrical value = value reads from scale

Example:
Scale reads 50
Voltage value is 50 x 0.01 = 0.5 mA

125 x 0.01 = 1.25 mA

Move your mouse to the resistor to read electric current.
Unit 5: Measuring of DCmA

Example measuring 25
Reading scale from 0.250
Electrical value = value reads from scale

Example:
Scale reads 70
Voltage value is 70 x 0.1 = 7 mA.

Example measuring 0.25A
Reading scale from 0.250
Electrical value = value reads from scale

Example:
Scale reads 200
Voltage value is 200 x 0.001 = 0.2 A.
1) Amp meter is used to measure what value?
   a) Voltage  
   b) Resistance  
   c) Electrical current  
   d) Power voltage

2) How to connect Amp meter?
   a) Series with load  
   b) Parallel with load  
   c) Parallel and series with load  
   d) Can connect using both series and parallel with load

3) What is it that must be caution while measuring DCmA?
   a) Connecting + end - terminal  
   b) Connecting terminal cord to the meter  
   c) Reading correct value from the right scale  
   d) Using meter while measuring value

4) Scale point to 50 and switch at 25 mA what is the voltage value?
   a) 2 mA  
   b) 25 mA  
   c) 10 mA  
   d) 50 mA

5) Scale point to 8 and switch at 2.5 A what is the voltage value?
   a) 0.5 A  
   b) 1 A  
   c) 1.5 A  
   d) 2 A

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Score Reports

Correct Answers: 1 of 5 questions.
Question answered incorrectly: 1, 2, 4, 5.
Result: 20%
Try Again!
Worksheet Unit 5

Give the definition of DCmA Meter and describe the step of using DCmA Meter measurement (5 Score)

Posttest

How to use Multi-Meter

Enter your name and surname: 

Choose the correct answer from a, b, c or d:

1) What instrument is designed for several functions of electric measurement?
   a. Volt.Meter 
   b. Ohm-Meter 
   c. Amp-Meter 
   d. Multi-Meter 
   a ○ b ○ c ○ d ○

2) What is the purpose of the utilization of Multi-Meter?
   a. Measure DC circuit 
   b. Measure AC circuit 
   c. Measure electric circuits 
   d. Measure electrical quantities (Volts, Amps and Ohms) 
   a ○ b ○ c ○ d ○

3) Which one of the following choices is the correct answer of the effective Multi-Meter?
   a. Display digital circuit 
   b. Sensitivity measurement 
   c. Indicate the correct scale 
   d. Combine several measurement functions 
   a ○ b ○ c ○ d ○