

# NOCC-A21 Electrician: Competence Package

Relevant Occupation/trade title: Electrician				SAQA ID: 91761	
Learning Area 13: <b>Install, maintain, troubleshoot and upgrade process control systems</b>				Total Hours:	56
Learning Project 3: <b>Maintain and troubleshoot PLCs and input/output (I/O) field devices</b>				Total Hours:	8
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		• LA13 LP 1-2			
Learning project description:					
Activity phase	Practical Skills Modules Content	Underpinning Knowledge Module Content	Work Experience Module Content	Didactical-methodological advice	Learning materials/Tools and Equipment
Reference to QCTO Curriculum	PM-None	KM07-KT05	WM-None		
Planning/ Preparation	<p><b><u>Provide access to (Given):</u></b> Simulated faults and/or faulty components on input/output equipment, materials and equipment as identified in last column;</p> <p><b>Apprentices must do/perform the following (hard and soft skills):</b></p> <ul style="list-style-type: none"><li>Read and interpret the diagram</li><li>Perform a risk assessment on the task</li><li>Systematically identify faults</li><li>Select tools and equipment needed for task</li><li>Plan sequence of tasks</li></ul>	<p><b><u>Knowledge of:</u></b></p> <ul style="list-style-type: none"><li>Common faults on PLCs and input/output devices</li><li>Fault finding procedures</li><li>Specific safety procedures related to PLCs and Input/Output device maintenance and troubleshooting</li><li>Statutory requirements as per work conducted</li></ul>	<p><b><u>Under supervision:</u></b> <i>If workplace allows for this exposure:</i></p> <ul style="list-style-type: none"><li>Troubleshoot PLCs and input/output devices (in a variety of contexts)</li><li>Replace faulty components on input/output devices</li></ul>	Lecture, presentations DVDs, audio-visual Demonstrations Practical applications	<p><b>Print materials, electronic files, software applications incl.:</b></p> <ul style="list-style-type: none"><li>Training manuals for trainers and apprentices incl. multimedia software</li><li>Set of presentation aids (videos, slides) for overhead or LED/LCD projectors</li><li>Statutory requirements:</li><li>SANS 10142-Part1</li><li>Municipal by-laws</li></ul> <p><b>Tools, equipment and materials incl.:</b></p> <ul style="list-style-type: none"><li>Electrical hand tools standard toolbox</li><li>Associated Powertools</li><li>Measuring instruments</li></ul>
Implementation/ Execution <u>Repair</u>	<ul style="list-style-type: none"><li>Rectify identified fault or replace faulty component</li><li>Test operation of PLC</li><li>Rectify any further faults if</li></ul>				

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Evaluation/ Documentation	not functioning correctly				<b>Materials:</b> <ul style="list-style-type: none"><li>• Pre-programmed PLC and Input/Output devices with simulated faults and/or faulty components</li><li>• Computer or handheld programmer</li><li>• <u>Replacement spares where applicable:</u><ul style="list-style-type: none"><li>• Input/output devices</li><li>• Lugs</li><li>• Conductors</li><li>• Cables</li></ul></li></ul> <b>PPE:</b> <ul style="list-style-type: none"><li>• Safety overall</li><li>• Safety boots</li></ul>
	<ul style="list-style-type: none"><li>• Document faults and performed repair</li><li>• Clean work area after completion of task in accordance with work site procedures and housekeeping standards</li></ul>				
Total	Hours: 8				
Specialisation additions					
Assessment guidance					
<ul style="list-style-type: none"><li>• Self assessment</li><li>• Group assessment</li><li>• Theory test</li></ul> Criteria for assessment: <ul style="list-style-type: none"><li>• Interpretation of diagram</li><li>• Faults correctly identified and repaired</li><li>• Functionality of circuit</li><li>• Clean worksite after completion of task and equipment returned safely to store</li></ul>					