

# 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 2: <b>Install and wire PLCs and input/output field devices</b>				Total Hours:	8
Requisite learning areas/projects to be in place (Pre-requisite and co-requisite):		• LA13 LP 1			
Learning project description: <b>Apprentices install and wire PLCs and input/output field devices.</b>					
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> Pre-programmed PLC and diagram from LA 12 LP1, materials and equipment as identified in last column;</p> <p><b><u>Apprentices must be able to do/perform the following (hard and soft) skills):</u></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>Select tools and equipment needed for task</li><li>Plan positioning of PLC and input and output devices</li><li>Plan wiring as per diagram</li><li>Plan sequence of tasks</li></ul>	<p><b><u>Knowledge of:</u></b></p> <ul style="list-style-type: none"><li>Wiring of circuits</li><li>Specific safety procedures related to PLCs and Input/Output devices</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>Read and interpret diagrams of PLCs (in a variety of contexts)</li><li>Mount and wire PLCs and input and 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 power tools</li><li>Measuring instruments</li></ul>
Implementation/ Execution Repair	<ul style="list-style-type: none"><li>Mount PLC as per diagram</li><li>Mount input and output devices</li></ul>				

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	<ul style="list-style-type: none"> <li>• Install conductors to input and output devices</li> <li>• Test operation of PLC and monitor on PC</li> <li>• Rectify wiring faults if not functioning correctly</li> <li>• Test programmed PLC until functioning</li> </ul>				<b>Materials:</b> <ul style="list-style-type: none"> <li>• Surface to mount PLC and Input/Output devices</li> <li>• Pre-programmed PLC</li> <li>• Input and Output Devices</li> <li>• Computer or handheld programmer</li> <li>• Lugs</li> <li>• Cable ties</li> <li>• Conductors</li> <li>• Cables</li> <li>• Slotted trunking</li> <li>• Labelling</li> </ul> <b>PPE:</b> <ul style="list-style-type: none"> <li>• Safety overall</li> <li>• Safety boots</li> </ul>
<b>Evaluation/ Documentation/ Housekeeping</b>	<ul style="list-style-type: none"> <li>• Document test results</li> <li>• Clean work area after completion of task in accordance with work site procedures and housekeeping standards</li> </ul>				
<b>Total</b>	Hours: 8				
<b>Specialisation additions</b>					
<b>Assessment guidance</b>					
<ul style="list-style-type: none"> <li>• Self assessment</li> <li>• Group assessment</li> <li>• Theory test</li> </ul> <b>Criteria for assessment:</b> <ul style="list-style-type: none"> <li>• Interpretation of diagram</li> <li>• Equipment mounted and wired correctly</li> <li>• Functionality of circuit</li> <li>• Clean worksite after completion of task and equipment returned safely to store</li> </ul>					