

Skill name

Electrical Installations

| Criteria | Mark |
|---|-------|
| A Health & Safety | 5.00 |
| B Commissioning | 10.00 |
| C Circuit Design & Manual Function | 20.00 |
| D Measurements & Level/Plumb | 10.00 |
| E Installation of Equipment & Wire-ways | 10.00 |
| F Wiring & Terminations | 10.00 |
| G Fault finding, Testing and Reporting | 15.00 |
| H Programming & Automatic Function | 20.00 |
| I | |

| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score |
|-----------------|----------------------------------|-------------------------------------|--|------------|
| A1 | Day 1 Health & Safety | M | Health & Safety during morning session | |
| | | M | Health & Safety during afternoon session | |
| A2 | Day 2 Health & Safety | M | Health & Safety during morning session | |
| | | M | Health & Safety during afternoon session | |
| A3 | Day 3 Health & Safety | M | Health & Safety during morning session | |
| | | M | Health & Safety during afternoon session | |

| A4 | Day 4 Health & Safety | M | Health & Safety during morning session | |
|-----------------|----------------------------------|---|--|------------|
| | | M | Health & Safety during afternoon session | |
| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score |
| B1 | Commissioning process | M M M M M M M M | Installation complete when electrical supply is requested Safe electrical installation when electrical supply is requested Safe work practices - power up Safe work practices - commissioning Safe work practices - programming No short circuits or earth faults Labeling Function chart | |
| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score |
| C1 | Circuit design | M M M M M M M M M | Size - supply cabling PS to A1 Colour codes - supply cabling PS to A1 Size - supply cabling A1 to B1 Colour codes - supply cabling A1 to B1 Size - supply cabling A1 to C1 Colour codes - supply cabling A1 to C1 Size - supply cabling B1 to Motor Size - cabling for lights Size - cabling for power outlets | |

| C2 | Manual Function - KNX | M | Size - cabling for heating circuit | |
|-----------------|----------------------------------|-------------------------------------|---|------------|
| | | M | Size - cabling for cooling circuit | |
| C3 | Manual function - Motor | M | Switch actuator Channel A | |
| | | M | Switch actuator Channel B | |
| | | M | Switch actuator Channel C | |
| | | M | Switch actuator Channel D | |
| | | M | Switch actuator Channel G | |
| | | M | Switch actuator Channel H | |
| | | M | Shutter actuator Channel A | |
| | | M | Dimming actuator Channel B | |
| | | M | Dimming actuator Channel A | |
| | | M | Motor runs in forward direction when S11 is pressed. Motor stays | |
| | | M | Forward indicator lamp H11 operating correctly | |
| | | M | Motor runs in reverse direction when S13 is pressed. Motor stays | |
| | | M | Reverse indicator lamp H13 operating correctly | |
| | | M | Motor stops when Stop button S12 is operated | |
| | | M | When motor is running in forward direction, the reverse contactor | |
| | | M | When motor is running in reverse direction, the forward contactor | |
| | | M | Overload light H12 operates when the overload is tripped | |
| | | M | Emergency stops | |
| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score |
| D1 | Measurements | M | Measurement 1 (Centres of H1 to H3) 1600mm | |
| D2 | Plumb/Level | M | Measurement 2 (Centres of S5 to S8) Horz 1000mm | |
| | | M | Measurement 3 (Centres of T1 to T2) Horz 1200mm | |
| | | M | Measurement 4 (Bottom of B2 to top of B3) Vert 600mm | |
| | | M | Measurement 5 (Bottom of H6 to bottom of S7) Vert 300mm | |
| | | M | Item 1 (A1) Level/Plumb | |
| | | M | Item 2 (B1) Level/Plumb | |
| | | M | Item 3 Vertikal tray d | |

| | | M M | Item 4 Item 5 | Vertical trunking Vertical | |
|-----------------------|---|---|--|-------------------------------|--|
| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score | |
| E1 | Installation of Equipment | M M M M M M | Correct equipment in correct locations on back wall of cubicle as Correct equipment in correct locations on left hand wall of cubicle A1 securely installed B1 securely installed S3 securely installed T1 securely installed | | |
| E2 | Installation of Wireways (Trunking and tray) | J | PVC Trunking. Securely fitted. Joints and angles are neat with no gaps | 0 1 2 3 | |
| | | J | Cable tray. Securely fitted. Joints and angles are neat with no gaps | 0 1 2 3 | |
| E3 | Installation of Wireways (Cable and conduits) | J | Cable. Correctly clipped with straight runs and even bends. | 0 1 2 3 | |
| | | J | PVC and metal conduit. Bends, angles and jumps are even with no gaps | 0 1 2 3 | |

| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score |
|-----------------|----------------------------------|-------------------------------------|---|------------------|
| F1 | Wiring in boards | J | Neatness of wiring in A1 | 0 1 2 3 |
| | | J | Neatness of wiring in B1, | 0 1 2 3 |
| | | J | Neatness of wiring in C1 | 0 1 2 3 |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| F2 | Cabling on tray | J | Neatness of cables on cable tray | 0 1 2 3 |
| | | | | |
| F3 | Terminations | M | A1: All conductors securely terminated with no bare copper show | |
| | | M | B1: All conductors securely terminated with no bare copper show | |
| | | M | C1: All conductors securely terminated with no bare copper show | |
| | | M | H4: All conductors securely terminated with no bare copper show | |
| | | M | H8: All conductors securely terminated with no bare copper show | |
| | | M | Q1: All conductors securely terminated with no bare copper show | |

| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score |
|-----------------|------------------------------------|--|---|------------|
| G1 | Fault Finding | M M M M M M M M M M | Fault 1 Fault 2 Fault 3 Fault 4 Fault 5 Fault 6 Fault 7 Fault 8 Fault 9 Fault 10 | |
| G2 | Testing and reporting | M M M M | Insulation resistance test - instrument and procedure Insulation resistance test - value and unit report sheet Earth Continuity test - instrument and procedure Earth Continuity test - value and unit report sheet | |
| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score |
| H1 | Programming/Automatic function KNX | M M M M M M M M M M | Function 1 - Operation Function 2 - Operation Function 3 - Operation Function 4 - Operation Function 5 - Operation Function 6 - Operation Function 7 - Operation Function 8 - Operation Function 9 - Operation Function 10 - Operation | |

| H2 | Programming/Automatic function Motor LOGO | M M M M M | Function 1 - Operation Function 2 - Operation Function 3 - Operation Function 4 - Operation Function 5 - Operation | |
|-----------------------|---|---|--|---------------|
| H3 | Interworking LOGO/KNX | M M | Function 6 - Operation Function 7 - Operation | |
| Sub Criteria ID | Sub Criteria Name or Description | Aspect Type M = Meas J = Judg | Aspect - Description | Judg Score |
| | | | | |

| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
|--|--|-----------------|-------------|
| No breaches and maintained a tidy workspace = 0.5 mark Any breach must be confirmed by at least 2 Experts and r | yes or no | 1 | 0.25 |
| No breaches and maintained a tidy workspace = 0.5 mark Any breach must be confirmed by at least 2 Experts and r | yes or no | 1 | 0.25 |
| No breaches and maintained a tidy workspace = 0.5 mark Any breach must be confirmed by at least 2 Experts and r | yes or no | 1 | 0.50 |
| No breaches and maintained a tidy workspace = 0.5 mark Any breach must be confirmed by at least 2 Experts and r | yes or no | 1 | 0.50 |
| No breaches and maintained a tidy workspace = 0.5 mark Any breach must be confirmed by at least 2 Experts and r | yes or no | 1 | 0.75 |
| No breaches and maintained a tidy workspace = 0.5 mark | yes or no | 1 | 0.75 |

Criterion A Total Mark 5.00

| | | | |
|--|-----------|---|------|
| Any breach must be confirmed by at least 2 Experts and r | | | |
| No breaches and maintained a tidy workspace = 0.5 mark | yes or no | 1 | 1.00 |
| Any breach must be confirmed by at least 2 Experts and r | | | |
| No breaches and maintained a tidy workspace = 0.5 mark | yes or no | 1 | 1.00 |
| Any breach must be confirmed by at least 2 Experts and r | | | |

| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
|--|--|-----------------|-------------|
|--|--|-----------------|-------------|

Criterion B Total Mark 10.00

| | | | |
|---|-----------|---|------|
| Installation fully complete (all equipment and covers in place) | yes or no | 6 | 1.00 |
| Installation electrically safe (all equipment fixed in place and covers in place) | yes or no | 6 | 1.00 |
| Safe work practices during power-up (all circuits powered) | yes or no | 6 | 0.75 |
| Safe work practices during commissioning. If any unsafe practices observed | yes or no | 6 | 0.75 |
| Safe work practices during programming. If any unsafe practices observed | yes or no | 6 | 0.50 |
| No short circuits or earth faults during power-up and commissioning | yes or no | 6 | 2.00 |
| All equipment labelled correctly following commissioning | yes or no | 6 | 2.00 |
| Function chart completed by competitor reflecting actual function | yes or no | 2 | 2.00 |

| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
|--|--|-----------------|-------------|
|--|--|-----------------|-------------|

Criterion C Total Mark 20.00

| | | | |
|---------------------------------|--------|---|------|
| 2,5mm2 | yes/no | 4 | 1.00 |
| Colour code as per instructions | yes/no | 7 | 0.25 |
| 2,5mm2 | yes/no | 4 | 1.00 |
| Colour code as per instructions | yes/no | 7 | 0.25 |
| 2,5mm2 | yes/no | 4 | 1.00 |
| Colour code as per instructions | yes/no | 7 | 0.25 |
| 1,5mm2 | yes/no | 4 | 1.00 |
| 1,5mm2 | yes/no | 7 | 0.25 |
| 2,5mm2 | yes/no | 4 | 0.50 |

| | | | |
|--|--------|---|------|
| 1,5mm2 | yes/no | 7 | 0.25 |
| 1,5mm2 | yes/no | 4 | 0.50 |
| Note: If any item requiring an earth is not earthed then any | yes/no | 6 | 0.50 |
| Light H3 | yes/no | 6 | 0.50 |
| Light H6 Top | yes/no | 6 | 0.50 |
| Light H6 Bottom | yes/no | 6 | 0.50 |
| Cooling H8 | yes/no | 6 | 0.50 |
| Heating H7 | yes/no | 6 | 0.50 |
| Light H5 | yes/no | 6 | 1.00 |
| H2 | yes/no | 6 | 0.50 |
| H4 | yes/no | 6 | 0.50 |

| | | | |
|--|--------|---|------|
| Note: If any item requiring an earth is not earthed then any | yes/no | 7 | 1.00 |
| Hand/Off/Auto switch in Hand position | yes/no | 7 | 0.50 |
| Hand/Off/Auto switch in Hand position | yes/no | 7 | 1.00 |
| Hand/Off/Auto switch in Hand position | yes/no | 7 | 0.50 |
| Hand/Off/Auto switch in Hand position | yes/no | 7 | 1.00 |
| Hand/Off/Auto switch in Hand position | yes/no | 7 | 1.50 |
| Hand/Off/Auto switch in Hand position | yes/no | 7 | 1.50 |
| Hand/Off/Auto switch in Hand position | yes/no | 7 | 0.50 |
| Function correctly as per instruction | yes/no | 7 | 1.25 |

| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
|--|--|-----------------|-------------|
| Plus or minus 2mm | yes/no | 5 | 1.00 |
| Plus or minus 2mm | yes/no | 5 | 1.00 |
| Plus or minus 2mm | yes/no | 5 | 1.00 |
| Plus or minus 2mm | yes/no | 5 | 1.00 |
| Plus or minus 2mm | yes/no | 5 | 1.00 |
| Bubble on or between lines on level, not outside | yes/no | 5 | 1.00 |
| Bubble on or between lines on level, not outside | yes/no | 5 | 1.00 |
| Bubble on or between lines on level, not outside | yes/no | 5 | 1.00 |

Criterion D Total Mark 10.00

| Bubble on or between lines on level, not outside | yes/no | 5 | 1.00 |
|--|--|-----------------|-------------|
| Bubble on or between lines on level, not outside | yes/no | 5 | 1.00 |
| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
| Visual Check by marking team | yes/no | 5 | 0.50 |
| Visual Check by marking team | yes/no | 5 | 0.50 |
| No roll or movement of A1 | yes/no | 5 | 0.50 |
| No roll or movement of B1 | yes/no | 5 | 0.50 |
| No roll or movement of S3 | yes/no | 5 | 0.50 |
| No roll or movement of PS | yes/no | 5 | 0.50 |
| | | 5 | 1.75 |
| Below industry standard or no attempt: Joints are badly cut | | | |
| Meets industry standard: Joints are neat and even but with | | | |
| Industry standard with elements of good practice: Joints are | | | |
| Excellent in comparison to industry standard: Joints are ne | | | |
| | | 5 | 1.75 |
| Below industry standard or no attempt: Joints are badly cut | | | |
| Meets industry standard: Joints are neat and even but with | | | |
| Industry standard with elements of good practice: Joints are | | | |
| Excellent in comparison to industry standard: Joints are ne | | | |
| | | 5 | 1.75 |
| Below industry standard or no attempt: Clips unevenly spa | | | |
| Meets industry standard: Cable straight and even with good | | | |
| Industry standard with elements of good practice: Cable st | | | |
| Excellent in comparison to industry standard: Cable straig | | | |
| | | 5 | 1.75 |
| Below industry standard or no attempt: Saddles not evenly | | | |
| Meets industry standard: Majority of bends have even radi | | | |
| Industry standard with elements of good practice: All of the | | | |
| Excellent in comparison to industry standard: All of the be | | | |

Criterion E Total Mark 10.00

| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
|--|--|-----------------|-------------|
| Below industry standard or no attempt: All cables not loom | | 5 | 1.75 |
| Meets industry standard: All looms are neat and tidy but w | | | |
| Industry standard with elements of good practice: All loom | | | |
| Excellent in comparison to industry standards: All looms w | | | |
| Below industry standard or no attempt: All cables not loom | | 5 | 2.00 |
| Meets industry standard: All looms are neat and tidy but w | | | |
| Industry standard with elements of good practice: All loom | | | |
| Excellent in comparison to industry standards: All looms w | | | |
| Below industry standard or no attempt: All cables not loom | | 5 | 1.75 |
| Meets industry standard: All looms are neat and tidy but w | | | |
| Industry standard with elements of good practice: All loom | | | |
| Excellent in comparison to industry standards: All looms w | | | |
| Below industry standard or no attempt: All cables not cable | | 5 | 1.50 |
| Meets industry standard: Cables neat and tidy but cable tie | | | |
| Industry standard with elements of good practice: Cables t | | | |
| Excellent in comparison to industry standards: Cables we | | | |
| No copper visible when viewed at 90 degrees and no dam | | 5 | 0.50 |
| No copper visible when viewed at 90 degrees and no dam | | 5 | 0.50 |
| No copper visible when viewed at 90 degrees and no dam | | 5 | 0.50 |
| No copper visible when viewed at 90 degrees and no dam | | 5 | 0.50 |
| No copper visible when viewed at 90 degrees and no dam | | 5 | 0.50 |
| No copper visible when viewed at 90 degrees and no dam | | 5 | 0.50 |

Criterion F Total Mark 10.00

| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
|--|--|-----------------|-------------|
| The correct fault symbol must be drawn in the correct location | yes/no | 7 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 2 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 7 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 2 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 7 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 2 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 7 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 2 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 7 | 1.00 |
| The correct fault symbol must be drawn in the correct location | yes/no | 2 | 1.00 |
| Suitable instrument and correct procedure used to get the reading | yes/no | 6 | 1.25 |
| Both value and unit must be entered correctly | yes/no | 2 | 1.25 |
| Suitable instrument and correct procedure used to get the reading | yes/no | 6 | 1.25 |
| Both value and unit must be entered correctly | yes/no | 2 | 1.25 |
| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
| Operation as per instructions | yes or no | 6 | 0.25 |
| Operation as per instructions | yes or no | 6 | 0.25 |
| Operation as per instructions | yes or no | 6 | 0.50 |
| Operation as per instructions | yes or no | 6 | 0.50 |
| Operation as per instructions | yes or no | 3 | 1.00 |
| Operation as per instructions | yes or no | 6 | 1.00 |
| Operation as per instructions | yes or no | 6 | 1.50 |
| Operation as per instructions | yes or no | 6 | 1.50 |
| Operation as per instructions | yes or no | 6 | 1.50 |
| Operation as per instructions | yes or no | 6 | 2.00 |

Criterion G Total Mark 15.00

Criterion H Total Mark 20.00

| In automode: Push S21 - Door opens for 3 seconds and H2 | yes or no | 3 | 2.00 |
|--|--|-----------------|-------------|
| While door is opening S23 have no affect on function. While | yes or no | 3 | 1.00 |
| S22 stops door if it is opening or closing. If door is stopped | yes or no | 3 | 2.00 |
| H23 shall always flash (2 hz) for 2 seconds before door closes | yes or no | 3 | 0.50 |
| H22 is always on in auto mode | yes or no | 3 | 0.50 |
| In automode: Left pushbutton of S8 has the same function | yes or no | 3 | 2.00 |
| In automode: Top light of H6 has the same function as H2 | yes or no | 3 | 2.00 |
| Extra Aspect Description (Meas or Judg) OR Judgement Score Description (Judg only) | Requirement or Nominal Size (Measurement Only) | WSSS Section | Max Mark |
| | | | |

Criterion I Total Mark 0.00

Competition Total Mark 100.00