

### SQ2010 Accuracy Figures

The accuracy figures are quoted over a logger temperature range of +5 to +45°C and assume that the logger is at a constant temperature. If the logger's temperature is varying then the errors could be considerably worse, especially for thermocouple measurements. These are worst case figures and are given as  $\pm(\text{percentage of reading} + \text{percentage of range})$  or  $\pm(\text{percentage of reading} + \text{fixed value})$ . The errors at 25°C are generally less than half of those quoted and over the ranges -30 to +5 and +45 to +65°C the errors are generally about twice those quoted.

| Analogue Range               | % of Reading | % of Range | Default Resolution |
|------------------------------|--------------|------------|--------------------|
| <b>Reference Temperature</b> | 0.0          | 0.1        | 0.01               |
| <b>Voltage Differential</b>  |              |            |                    |
| -6 to 25Vdc                  | 0.1          | 0.1        | 0.001              |
| -6 to 12Vdc                  | 0.1          | 0.1        | 0.001              |
| -6 to 6Vdc                   | 0.1          | 0.1        | 0.0001             |
| -3 to 3Vdc                   | 0.1          | 0.1        | 0.0001             |
| -0.6 to 2.4Vdc               | 0.1          | 0.1        | 0.0001             |
| -0.6 to 1.2Vdc               | 0.1          | 0.1        | 0.0001             |
| -0.6 to 0.6Vdc               | 0.1          | 0.1        | 0.00001            |
| -0.3 to 0.3Vdc               | 0.1          | 0.1        | 0.00001            |
| -0.15 to 0.15Vdc             | 0.1          | 0.1        | 0.00001            |
| -0.075 to 0.075Vdc           | 0.1          | 0.1        | 0.000001           |
| <b>Voltage Single Ended</b>  |              |            |                    |
| -6 to 25Vdc                  | 0.1          | 0.1        | 0.001              |
| -6 to 12Vdc                  | 0.1          | 0.1        | 0.001              |
| -6 to 6Vdc                   | 0.1          | 0.1        | 0.0001             |
| -3 to 3Vdc                   | 0.1          | 0.1        | 0.0001             |
| -0.6 to 2.4Vdc               | 0.1          | 0.1        | 0.0001             |
| -0.6 to 1.2Vdc               | 0.1          | 0.1        | 0.0001             |
| -0.6 to 0.6Vdc               | 0.1          | 0.1        | 0.00001            |
| -0.3 to 0.3Vdc               | 0.1          | 0.1        | 0.00001            |
| -0.15 to 0.15Vdc             | 0.1          | 0.1        | 0.00001            |
| -0.075 to 0.075Vdc           | 0.1          | 0.2        | 0.000001           |
| <b>Current Differential</b>  |              |            |                    |
| -30 to 30mA                  | 0.1          | 0.1        | 0.001              |
| 4 to 20mA                    | 0.1          | 0.1        | 0.001              |

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## Hints and Tips

| Analogue Range                          | % of Reading | % of Range | Default Resolution |
|-----------------------------------------|--------------|------------|--------------------|
| <b>Resistance 2 Wire</b>                |              |            |                    |
| 0 to 300000Ω sub-range 0 to 33000Ω      | 0.1          | 0.1        | 1.0                |
| 0 to 300000Ω sub-range 33000 to 300000Ω | 0.3          | 0.1        | 1.0                |
| 0 to 20000Ω                             | 0.1          | 0.1        | 0.1                |
| 0 to 5000Ω                              | 0.1          | 0.1        | 0.1                |
| 0 to 1250Ω                              | 0.1          | 0.1        | 0.01               |
|                                         |              |            |                    |
| <b>Thermistor U type</b>                |              |            |                    |
| -50 to 150°C sub-range -50 to 100°C     | 0.2          | 0.1        | 0.01               |
| -50 to 150°C sub-range 100 to 150°C     | 0.5          | 0.0        | 0.01               |
|                                         |              |            |                    |
| <b>Thermistor Y type</b>                |              |            |                    |
| -50 to 150°C sub-range -50 to 100°C     | 0.2          | 0.1        | 0.01               |
| -50 to 150°C sub-range 100 to 150°C     | 0.5          | 0.0        | 0.01               |
|                                         |              |            |                    |
| <b>Thermistor S type</b>                |              |            |                    |
| -30 to 150°C sub-range -30 to 15°C      | 0.2          | 0.1        | 0.01               |
| -30 to 150°C sub-range 15 to 150°C      | 0.2          | 0.1        | 0.01               |
|                                         |              |            |                    |
| <b>Pt100 BS EN 60751 2 wire</b>         |              |            |                    |
| -200 to 850°C                           | 0.2          | 0.1        | 0.1                |
|                                         |              |            |                    |
| <b>Pt100 JIS 1604 2 wire</b>            |              |            |                    |
| -200 to 850°C                           | 0.2          | 0.1        | 0.1                |
|                                         |              |            |                    |
| <b>Pt1000 BS EN 60751 2 wire</b>        |              |            |                    |
| -200 to 850°C                           | 0.2          | 0.1        | 0.01               |
|                                         |              |            |                    |
| <b>Thermocouple J Type Differential</b> |              |            |                    |
| -200 to 1200°C sub-range -200 to -50°C  | 0.5          | 0.1        | 0.1                |
| -200 to 1200°C sub-range -50 to 1200°C  | 0.05         | 0.1        | 0.1                |
|                                         |              |            |                    |
| <b>Thermocouple J Type Single Ended</b> |              |            |                    |
| -200 to 1200°C sub-range -200 to -50°C  | 1.2          | 0.2        | 0.1                |
| -200 to 1200°C sub-range -50 to 1200°C  | 0.0          | 0.2        | 0.1                |
|                                         |              |            |                    |
| <b>Thermocouple K Type Differential</b> |              |            |                    |
| -200 to 1372°C sub-range -200 to -50°C  | 0.8          | 0.1        | 0.1                |
| -200 to 1372°C sub-range -50 to 1372°C  | 0.05         | 0.1        | 0.1                |
|                                         |              |            |                    |
| <b>Thermocouple K Type Single Ended</b> |              |            |                    |
| -200 to 1372°C sub-range -200 to -50°C  | 2            | 0.2        | 0.1                |
| -200 to 1372°C sub-range -50 to 1372°C  | 0.1          | 0.2        | 0.1                |
|                                         |              |            |                    |
| <b>Thermocouple N Type Differential</b> |              |            |                    |
| -200 to 1300°C sub-range -200 to -50°C  | 1.5          | 0.15       | 0.1                |
| -200 to 1300°C sub-range -50 to 1300°C  | 0.0          | 0.15       | 0.1                |
|                                         |              |            |                    |
| <b>Thermocouple N Type Single Ended</b> |              |            |                    |
| -200 to 1300°C sub-range -200 to -50°C  | 2.5          | 0.35       | 0.1                |
| -200 to 1300°C sub-range -50 to 1300°C  | 0.0          | 0.35       | 0.1                |
|                                         |              |            |                    |
| <b>Thermocouple R Type Differential</b> |              |            |                    |
| -50 to 1768°C sub-range 0 to 350°C      | 0.0          | 0.5        | 0.1                |
| -50 to 1768°C sub-range 350 to 1768°C   | 0.0          | 0.25       | 0.1                |

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## Hints and Tips

| Analogue Range                          | % of Reading | % of Range  | Default Resolution |
|-----------------------------------------|--------------|-------------|--------------------|
| <b>Thermocouple R Type Single Ended</b> |              |             |                    |
| -50 to 1768°C sub-range 0 to 350°C      | 0.0          | 1           | 0.1                |
| -50 to 1768°C sub-range 350 to 1768°C   | 0.0          | 0.6         | 0.1                |
|                                         |              |             |                    |
| <b>Thermocouple S Type Differential</b> |              |             |                    |
| -50 to 1768°C sub-range 0 to 350°C      | 0.0          | 0.5         | 0.1                |
| -50 to 1768°C sub-range 350 to 1768°C   | 0.0          | 0.3         | 0.1                |
|                                         |              |             |                    |
| <b>Thermocouple S Type Single Ended</b> |              |             |                    |
| -50 to 1768°C sub-range 0 to 350°C      | 0.0          | 0.1         | 0.1                |
| -50 to 1768°C sub-range 350 to 1768°C   | 0.0          | 0.6         | 0.1                |
|                                         |              |             |                    |
| <b>Thermocouple T Type Differential</b> |              |             |                    |
| -200 to 400°C sub-range -200 to 0°C     | 0.8          | 0.35        | 0.1                |
| -200 to 400°C sub-range 0 to 400°C      | 0.0          | 0.35        | 0.1                |
|                                         |              |             |                    |
| <b>Thermocouple T Type Single Ended</b> |              |             |                    |
| -200 to 400°C sub-range -200 to 0°C     | 1.5          | 0.75        | 0.1                |
| -200 to 400°C sub-range 0 to 400°C      | 0.0          | 0.75        | 0.1                |
|                                         |              |             |                    |
| <b>Digital</b>                          |              |             |                    |
| All Ranges                              | 0.0035       | +1 Hz/Count |                    |
|                                         |              |             |                    |
|                                         |              |             |                    |