The VLX-64 is a member of the VLX / DX series of Electric Encoders™, based on Netzer Precision proprietary technology. The Electric Encoder™ offers many advantages - some unparalleled for the industrial automation market.

- Low profile (6 mm)
- Hollow, floating shaft
- Absolute position
- No bearings or other contacting elements
- High resolution and precision
- High tolerance to temperature extremes, shock, moisture, EMI, RFI and Magnetic fields
- Very low weight
- Holistic signal generation
- Digital interfaces

The Electric Encoder™ is unique in being holistic, i.e., its output reading is the averaged outcome of the whole area of the rotor. This feature makes the Electric Encoder™ forgiving to mounting tolerances, mechanical wander etc.

The absence of components such as ball bearings, flexible couplers, glass disc, light sources and detectors, along with very low power consumption makes the Electric Encoder™ virtually failure free.

The internally shielded, DC operated Electric Encoder™ includes an electric field generator, a field receiver, a sinusoidal shaped dielectric rotor, and processing electronics.

The output of Electric Encoder™ is a digital serial with absolute position single turn. The combination of precision, low profile, low weight and high reliability have made Netzer Precision encoders particularly suitable to a wide variety of industrial automation applications.

### General

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angular resolution</td>
<td>18 bits ; 262,144 CPR</td>
</tr>
<tr>
<td>Maximum tested static error</td>
<td>≤ 0.030°*</td>
</tr>
<tr>
<td>Maximum operational speed</td>
<td>1,500 rpm</td>
</tr>
<tr>
<td>Measurement range</td>
<td>Unlimited rotation</td>
</tr>
<tr>
<td>Rotation direction</td>
<td>Adjustable CW/CCW*</td>
</tr>
<tr>
<td>Position measurement</td>
<td>Absolute, single turn</td>
</tr>
<tr>
<td>* Default same direction from bottom side of the encoder</td>
<td></td>
</tr>
</tbody>
</table>

### Electrical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply voltage</td>
<td>5V ± 5%</td>
</tr>
<tr>
<td>Interconnection</td>
<td>Connector</td>
</tr>
</tbody>
</table>

### Environmental

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating temperature range</td>
<td>-25°C to +65°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40°C to +100°C</td>
</tr>
<tr>
<td>Relative humidity</td>
<td>98% Non condensing</td>
</tr>
<tr>
<td>Shock endurance</td>
<td>100 g for 11 ms</td>
</tr>
<tr>
<td>Vibration endurance</td>
<td>20 g 10 – 2000 Hz</td>
</tr>
</tbody>
</table>

### Mechanical

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowable mounting eccentricity</td>
<td>±0.1 mm</td>
</tr>
<tr>
<td>Allowable rotor axial motion</td>
<td>±0.1 mm</td>
</tr>
<tr>
<td>Rotor inertia</td>
<td>5,652 gr · mm²</td>
</tr>
<tr>
<td>Total weight</td>
<td>20 gr</td>
</tr>
<tr>
<td>Outer Ø /Inner Ø/ Height</td>
<td>64 / 34 / 6 mm</td>
</tr>
<tr>
<td>Material (stator, rotor)</td>
<td>FR4</td>
</tr>
<tr>
<td>Nominal air gap (stator, rotor)</td>
<td>0.6 mm</td>
</tr>
</tbody>
</table>

**Sold & Serviced By:**

[Electromate](https://www.electromate.com)

[Servo2Go.com](https://www.servo2go.com)
**Digital SSi Interface**

Synchronous Serial Interface (SSi) is a point-to-point serial interface standard between a master (e.g., controller) and a slave (e.g., sensor) for digital data transmission.

**SSi / BiSS output signal parameters**

<table>
<thead>
<tr>
<th>Description</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>Total number of data bits</td>
</tr>
<tr>
<td>T</td>
<td>Clock period</td>
</tr>
<tr>
<td>f=1/T</td>
<td>Clock frequency</td>
</tr>
<tr>
<td>Tu</td>
<td>Bit update time</td>
</tr>
<tr>
<td>Tp</td>
<td>Pause time</td>
</tr>
<tr>
<td>Tm</td>
<td>Monoflop time</td>
</tr>
<tr>
<td>Tr</td>
<td>Time between 2 adjacent requests</td>
</tr>
<tr>
<td>fr=1/Tr</td>
<td>Data request frequency</td>
</tr>
</tbody>
</table>

**Software tools: (SSi / BiSS - C)**

Advanced calibration and monitoring options are available by using the factory supplied Electric Encoder Explorer software. This facilitates proper mechanical mounting, offsets calibration and advanced signal monitoring.

**Description Recommendations**

<table>
<thead>
<tr>
<th>Bit #</th>
<th>Description</th>
<th>Default</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>Ack</td>
<td>0</td>
<td>1/clock</td>
</tr>
<tr>
<td>27</td>
<td>Start</td>
<td>1</td>
<td>1 bit</td>
</tr>
<tr>
<td>26</td>
<td>&quot;0&quot;</td>
<td>0</td>
<td>1 bit</td>
</tr>
<tr>
<td>8...26</td>
<td>AP</td>
<td>1</td>
<td>1 bit</td>
</tr>
<tr>
<td>7</td>
<td>Error</td>
<td>1</td>
<td>1 bit</td>
</tr>
<tr>
<td>6</td>
<td>Warn.</td>
<td>1</td>
<td>1 bit</td>
</tr>
<tr>
<td>0..5</td>
<td>CRC</td>
<td>6 bits</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Timeout</td>
<td>25 μs</td>
<td></td>
</tr>
</tbody>
</table>

**BiSS – C Interface** is unidirectional serial synchronous protocol for digital data transmission where the Encoder acts as “slave” transmits data according to “Master” clock. The BiSS protocol is designed in B mode and C mode (continuous mode). The BiSS-C interface as the SSi is based on RS-422 standards.
## Ordering Code

<table>
<thead>
<tr>
<th>VLX</th>
<th>64</th>
<th>32</th>
<th>S</th>
<th>G</th>
<th>C</th>
<th>n1</th>
<th>n2</th>
<th>n3</th>
</tr>
</thead>
<tbody>
<tr>
<td>DS</td>
<td>Product line</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Outer Diameter</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fine ECR</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>Digital : SSi</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>Digital : BiSS-C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Interconnection
- C - Connector on board

### Related documents
- LX-60 User Manual: Mechanical, Electrical and calibration setup.
- Demonstration Kit:
  - DKIT-VLX-60-SG with SSi interface
  - DKIT-VLX-601G with BiSS interface Includes, mounted encoder on rotary jig, and RS-422 to USB converter.

## Optional Accessories

### Interconnection - connector HRS DF13-10S-1.25

<table>
<thead>
<tr>
<th>#</th>
<th>SSi / BiSS</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>5V</td>
<td>P.S.</td>
</tr>
<tr>
<td>7</td>
<td>GND</td>
<td>GND /RTN</td>
</tr>
<tr>
<td>6</td>
<td>Data+</td>
<td>Data / NCP TX</td>
</tr>
<tr>
<td>5</td>
<td>Data-</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Clock-</td>
<td>Clock / NCP RX</td>
</tr>
<tr>
<td>3</td>
<td>Clock+</td>
<td></td>
</tr>
</tbody>
</table>

### Accessories - cables, optional

#### SSi / BiSS

<table>
<thead>
<tr>
<th>SSi / BiSS</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB-00088-250</td>
<td>AWG30, 250 mm</td>
</tr>
<tr>
<td>CB-00088-500</td>
<td>AWG30, 500 mm</td>
</tr>
</tbody>
</table>

Netzer Cat No.: CB 00014
Cable: 30 AWG twisted pair (3):
- 2 (30 AWG 25/44 tinned copper, Insulation: PFE Ø 0.15 to Ø 0.6 ± 0.05 OD)
- Temperature rating: -60 to +150 Deg C
- Braided shield: Thinned copper braided 95% min. coverage
- Jacket: 0.44 silicon rubber (NFA 11-A1) Ø 3.45 ± 0.2 OD

**Pair #**

<table>
<thead>
<tr>
<th>A1-A2</th>
<th>Red / Black</th>
</tr>
</thead>
<tbody>
<tr>
<td>A3-A6</td>
<td>Gray / Blue</td>
</tr>
<tr>
<td>A5-A6</td>
<td>Green / Yellow</td>
</tr>
</tbody>
</table>

**Color**

- 30 AWG twisted pairs (3)
- Braided shield
- 0.44 mm
- Ø 3.45 ± 0.2 mm
- Ø 0.61 ± 0.051 mm
- 0.017
- 0.061 ± 0.053 mm
Unless otherwise specified
Dimensions are in: mm
Surface finish: N6
Linear tolerances: ±0.1 deg