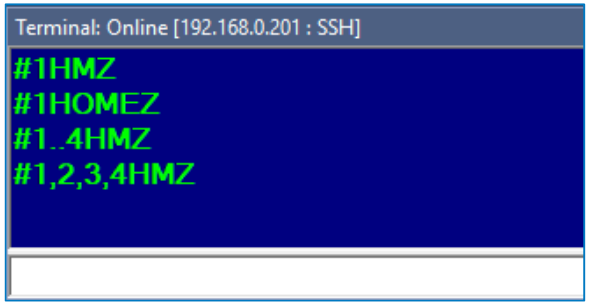

# Absolute Position Read

# Absolute “Homing” Position Read

- No home search move (motion) required
- Motor does not need to be energized (but can be)
- Typically, used with absolute feedback devices
- Absolute position read is governed by the following elements
  - Motor[].pAbsPos
  - Motor[].AbsPosFormat
  - Motor[].AbsPosSf
  - Motor[].HomeOffset
  - Motor[].PowerOnMode (optional)

- Online command

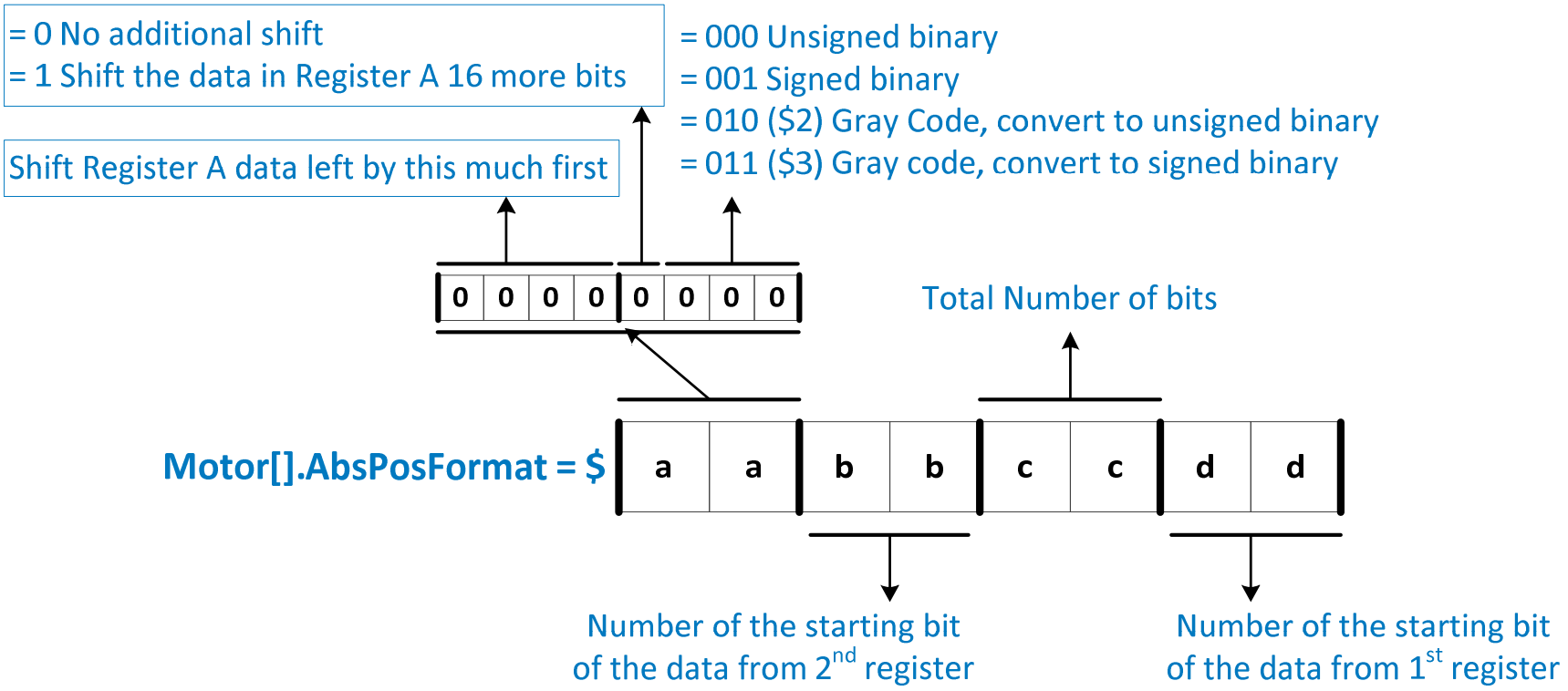



- Program command
  - HOMEZ 1
  - HOMEZ 1..4
  - HOMEZ 1,2,3,4

# Absolute Position Read Control

- **Motor[].pAbsPos**
  - Pointer to first source address (second must be consecutive)
    - E.g. Motor[].**p**AbsPos = Gate3[].Chan[].SerialEncDataA**.a**
- **Motor[].AbsPosSf**
  - Typically equal to Motor[].PosSf
  - Dual feedback system?
- **Motor[].HomeOffset**
  - User configurable zero offset in motor units
- **Motor[].PowerOnMode (optional)**
  - =4 to read position automatically on power-up
  - Encoder power supply available?

# Absolute Position Read Control

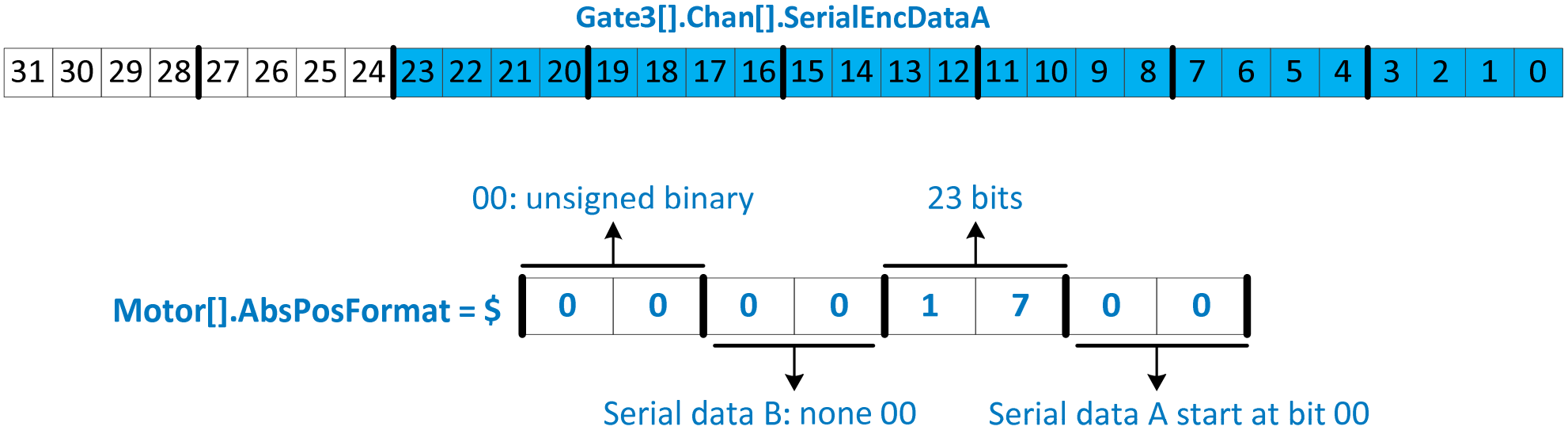



*Note*

Absolute linear scales are always read as unsigned (positive – "no multiturn" data)

# Absolute Position Read Example

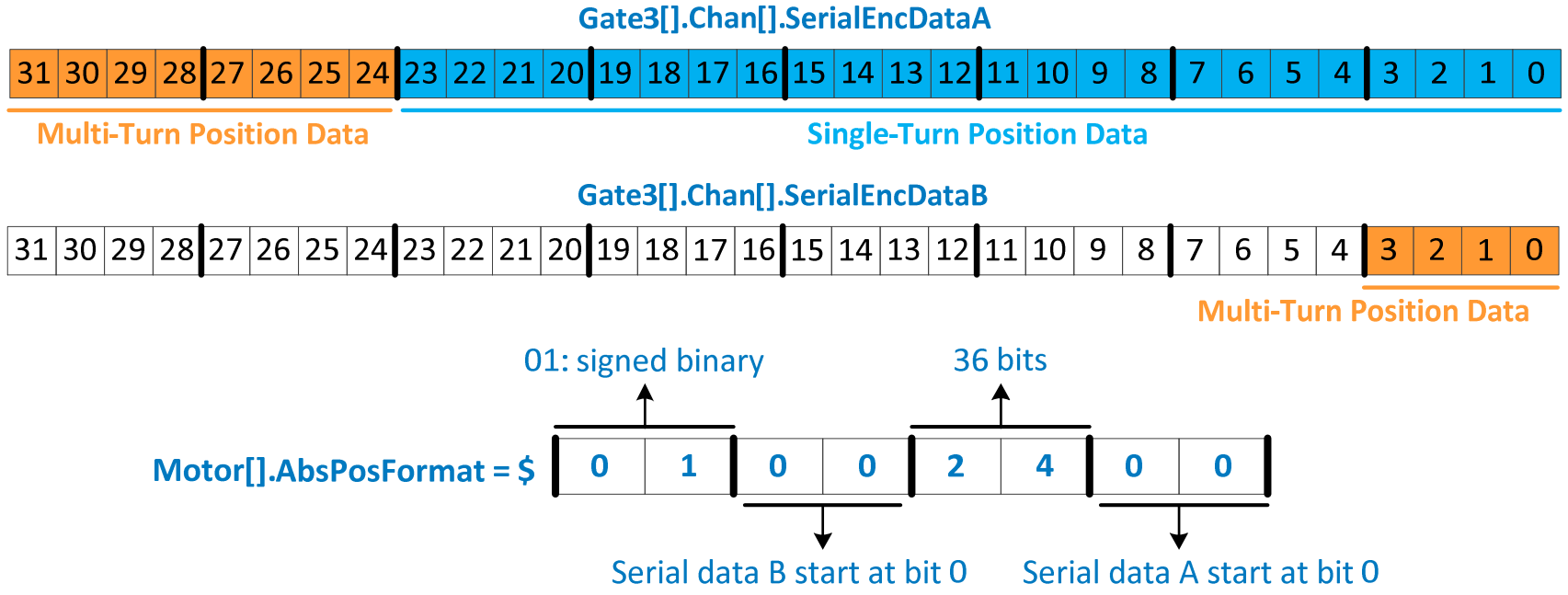
- An absolute serial encoder with 23 bits of binary single-turn (no multi-turn) position data located in the lower fields of serial data A register:




```
Motor[1].pAbsPos = Gate3[0].Chan[0].SerialEncDataA.a
Motor[1].AbsPosSf = Motor[1].PosSf
Motor[1].AbsPosFormat = $00001700
Motor[1].HomeOffset = 0
Motor[1].PowerOnMode = 0
```

# Absolute Position Read Example

- A 36-bit binary serial encoder with 24 bits of single-turn and 12 bits of multi-turn position




```
Motor[1].pAbsPos = Gate3[0].Chan[0].SerialEncDataA.a
Motor[1].AbsPosSf = Motor[1].PosSf
Motor[1].AbsPosFormat = $01002400
Motor[1].HomeOffset = 0
Motor[1].PowerOnMode = 0
```

# Absolute Position Read Exercise

- **User shared memory register as "dummy" absolute position data source register**

```
Motor[1].pAbsPos = Sys.Idata[100].a      // ABSOLUTE POSITION SOURCE REGISTER
Motor[1].AbsPosFormat = $00002000        // UNSIGNED 32 BITS
Motor[1].AbsPosSF = Motor[1].PosSf
Motor[1].HomeOffset = 0                  // HOME OFFSET [mu]
Motor[1].PowerOnMode = 0
```

- **Write to the source register "scaled" motor units values**
  - Normally, this data is in raw counts
  - E.g. Sys.Idata[100] = **10** / Motor[1].PosSf

- **Perform an absolute read and monitor position window**
  - #1HMZ
  - Try adding a home offset
    - Of the same magnitude! (e.g. **10**)

*Note*

When finished with this exercise, restore the original home offset, and set pAbsPos=0