



# Controller communication overview

| Controller type<br><br>-----<br>Protocol         | XUMU and XLA                                  |                                     | Stages               |                 |                         |                         | Control interface                                                                                                                                                    | Input / Output |
|--------------------------------------------------|-----------------------------------------------|-------------------------------------|----------------------|-----------------|-------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|                                                  | Integrated controller                         | XD-OEM PCB controller               | XD-C PCB controller  | XD-C controller | XD-M controller         | XD-I9 controller        |                                                                                                                                                                      |                |
| Serial communication<br>(ASCII over virtual COM) | CAN adapter interface                         | USB mini B                          | USB C                | USB C           | USB C                   | USB B                   | Xeryon Windows Interface<br>Python<br>C++<br>Labview<br>Matlab<br>ASCII code (terminal)<br><br>(The complete list of commands is available in the controller manual) | Input/Output   |
| UART (TTL/CMOS)                                  | CAN adapter interface                         | IO header                           | IO header            | N/A             | Optional                | Optional                |                                                                                                                                                                      | Input/Output   |
| UART (RS232)                                     | CAN adapter interface                         | RS232 on piggyback board            | N/A                  | N/A             | Dsub 9 pin              | Dsub 9 pin              |                                                                                                                                                                      | Input/Output   |
| Ethernet                                         | N/A                                           | N/A                                 | N/A                  | N/A             | Optional                | Optional                |                                                                                                                                                                      | Input/Output   |
| RS422                                            | CAN adapter interface                         | RS422 on piggyback board            | N/A                  | N/A             | N/A                     | Optional                | Contact Xeryon vsupport team                                                                                                                                         | Input/Output   |
| I2C                                              | N/A                                           | Optional                            | IO header            | N/A             | Optional                | Optional                |                                                                                                                                                                      | Input/Output   |
| CANopen                                          | CAN on ZIF                                    | N/A                                 | N/A                  | N/A             | N/A                     | N/A                     | CiA 402 profile (DS402)                                                                                                                                              | Input/Output   |
| EtherCat                                         | CAN adapter interface (CANopen over EtherCAT) | EtherCat on piggyback board         | N/A                  | N/A             | N/A                     | N/A                     | EtherCat control interface (TwinCat, ...)                                                                                                                            | Input/Output   |
| Step on pulse                                    | IO on ZIF (not for XUMU)                      | IO header (not for XUMU)            | IO header            | N/A             | Dsub 15 / 25            | Dsub 15 / 25            | Pulse 3,3 V or 5V                                                                                                                                                    | Input          |
| A quad B input (encoder follower)                | IO on ZIF (not for XUMU)                      | IO header (not for XUMU)            | IO header            | N/A             | Dsub 15 / 25            | Dsub 15 / 25            |                                                                                                                                                                      | Input          |
| PWM control (speed & direction)                  | IO on ZIF                                     | IO header (not for XUMU)            | IO header            | N/A             | Dsub 15 / 25            | Dsub 15 / 25            |                                                                                                                                                                      | Input          |
| Analog control (speed & direction)               | IO on ZIF (0 - 3,3 V)                         | IO header (0 - 10 V) (not for XUMU) | IO header (0 - 10 V) | N/A             | Dsub 15 / 25 (0 - 10 V) | Dsub 15 / 25 (0 - 10 V) | Voltage level depending on controller type                                                                                                                           | Input          |
| A quad B encoder output                          | IO on ZIF (not for XUMU)                      | IO header (not for XUMU)            | IO header            | N/A             | Optional                | Optional                | Signal: Encoder output                                                                                                                                               | Output         |
| Digital pulse 3,3V                               | IO on ZIF (not for XUMU)                      | IO header (not for XUMU)            | IO header            | N/A             | Dsub 15 / 25            | Dsub 15 / 25            | Signal: Trigger pulse on specific positions                                                                                                                          | Output         |
| Digital signal 3,3V                              | IO on ZIF (not for XUMU)                      | IO header (not for XUMU)            | IO header            | N/A             | Dsub 15 / 25            | Dsub 15 / 25            | Signal: Index found                                                                                                                                                  | Output         |
| Digital signal 3,3V                              | IO on ZIF (not for XUMU)                      | IO header (not for XUMU)            | IO header            | N/A             | Dsub 15 / 25            | Dsub 15 / 25            | Signal: Position reached                                                                                                                                             | Output         |
| Digital signal 3,3V                              | IO on ZIF (not for XUMU)                      | IO header (not for XUMU)            | IO header            | N/A             | Optional                | Optional                | Signal: Limit passed                                                                                                                                                 | Output         |
| Digital signal 3,3V                              | IO on ZIF                                     | IO header                           | IO header            | N/A             | Dsub 15 / 25            | Dsub 15 / 25            | Signal: Error                                                                                                                                                        | Output         |