

| End Station Controls Chassis 2       |        | Left Rail |        |        |         |       |         |     |
|--------------------------------------|--------|-----------|--------|--------|---------|-------|---------|-----|
| Name                                 | Color  | Rail      | Module | Number | Channel | Type  | Adapter | Pin |
| <b>Power</b>                         |        |           |        |        |         |       |         |     |
| 24V                                  | violet | L         | OMRON  | DC_1   | 24V     | P     | TBLOCK  |     |
| 0V                                   | gray   | L         | OMRON  | DC_1   | 0V      | P     | TBLOCK  |     |
| 24V                                  | violet | L         | EK1101 | 0      | 24V     | P     | TBLOCK  |     |
| 0V                                   | gray   | L         | EK1101 | 0      | 0V      | P     | TBLOCK  |     |
| 5V_1                                 | red    | L         | EK1101 | 0      | +       | P     | DC_1    | +V  |
| 5VRET_1                              | black  | L         | EK1101 | 0      | -       | P     | DC_1    | -V  |
| 5V_2                                 | red    | L         | EL9190 | 4      | +       | P     | DC_2    | +V  |
| 5VRET_2                              | black  | L         | EL9190 | 4      | -       | P     | DC_2    | -V  |
| 24V                                  | violet | L         | EL9400 | 12     | 24V     | P     | TBLOCK  |     |
| 0V                                   | gray   | L         | EL9400 | 12     | 0V      | P     | TBLOCK  |     |
| 5V_3                                 | red    | L         | EL9400 | 12     | +       | P     | DC_3    | +V  |
| 5VRET_3                              | black  | L         | EL9400 | 12     | -       | P     | DC_3    | -V  |
| 5V_4                                 | red    | L         | EL9190 | 15     | +       | P     | DC_4    | +V  |
| 5VRET_4                              | black  | L         | EL9190 | 15     | -       | P     | DC_4    | -V  |
| 24V                                  | violet | L         | OMRON  | DC_2   | 24V     | P     | TBLOCK  |     |
| 0V                                   | gray   | L         | OMRON  | DC_2   | 0V      | P     | TBLOCK  |     |
| 24V                                  | violet | L         | OMRON  | DC_3   | 24V     | P     | TBLOCK  |     |
| 0V                                   | gray   | L         | OMRON  | DC_3   | 0V      | P     | TBLOCK  |     |
| 24V                                  | violet | L         | OMRON  | DC_4   | 24V     | P     | TBLOCK  |     |
| 0V                                   | gray   | L         | OMRON  | DC_4   | 0V      | P     | TBLOCK  |     |
| <b>Coupler</b>                       |        |           |        |        |         |       |         |     |
| Input                                | CAT5   | L         | EK1101 | 0      | X2      | Comm. | IN      |     |
| Output                               | CAT5   | L         | EK1101 | 0      | X2      | Comm. | M/0     | X1  |
| <b>Laser Diagnostics</b>             |        |           |        |        |         |       |         |     |
| Laser diode 1 power monitor +        | green  | L         | EL3104 | 1      | +I1     | AI    | 12      | 1   |
| Laser diode 1 power monitor -        | white  | L         | EL3104 | 1      | -I1     | AI    | 12      | 14  |
| Laser diode 2 power monitor +        | green  | L         | EL3104 | 1      | +I2     | AI    | 12      | 2   |
| Laser diode 2 power monitor -        | white  | L         | EL3104 | 1      | -I2     | AI    | 12      | 15  |
| Laser crystal, TEC error signal +    | green  | L         | EL3104 | 1      | +I3     | AI    | 12      | 3   |
| Laser crystal, TEC error signal -    | white  | L         | EL3104 | 1      | -I3     | AI    | 12      | 16  |
| Doubling crystal, TEC error signal + | green  | L         | EL3104 | 1      | +I4     | AI    | 12      | 4   |
| Doubling crystal, TEC error signal - | white  | L         | EL3104 | 1      | -I4     | AI    | 12      | 17  |
| Laser diode 1, TEC error signal +    | green  | L         | EL3104 | 2      | +I1     | AI    | 12      | 6   |
| Laser diode 1, TEC error signal -    | white  | L         | EL3104 | 2      | -I1     | AI    | 12      | 19  |
| Laser diode 2, TEC error signal +    | green  | L         | EL3104 | 2      | +I2     | AI    | 12      | 7   |
| Laser diode 2, TEC error signal -    | white  | L         | EL3104 | 2      | -I2     | AI    | 12      | 20  |
| Noise eater monitor +                | green  | L         | EL3104 | 2      | +I3     | AI    | 12      | 12  |
| Noise eater monitor -                | white  | L         | EL3104 | 2      | -I3     | AI    | 12      | 25  |
|                                      | green  | L         | EL3104 | 2      | +I4     | AI    | 12      |     |
|                                      | white  | L         | EL3104 | 2      | -I4     | AI    | 12      |     |
| 5V_1                                 | red    | L         | EL1124 | 3      | +       | P     | 12      | VCC |
| 5VRET_1                              | black  | L         | EL1124 | 3      | -       | P     | 12      | GND |
| Laser diode 1, temp guard            | brown  | L         | EL1124 | 3      | I1      | BI    | 12      | 8   |
| Laser diode 2, temp guard            | brown  | L         | EL1124 | 3      | I2      | BI    | 12      | 9   |
| Interlock                            | brown  | L         | EL1124 | 3      | I3      | BI    | 12      | 13  |
|                                      | brown  | L         | EL1124 | 3      | I4      | BI    | 12      |     |
| <b>LSC Demodulators</b>              |        |           |        |        |         |       |         |     |
| RF Mon 1 +                           | green  | L         | EL3104 | 5      | +I1     | AI    | 11      | 1   |
| RF Mon 1 -                           | white  | L         | EL3104 | 5      | -I1     | AI    | 11      | 20  |
| LO Mon 1 +                           | green  | L         | EL3104 | 5      | +I2     | AI    | 11      | 2   |
| LO Mon 1 -                           | white  | L         | EL3104 | 5      | -I2     | AI    | 11      | 21  |
| RF Mon 2 +                           | green  | L         | EL3104 | 5      | +I3     | AI    | 11      | 3   |
| RF Mon 2 -                           | white  | L         | EL3104 | 5      | -I3     | AI    | 11      | 22  |
| LO Mon 2 +                           | green  | L         | EL3104 | 5      | +I4     | AI    | 11      | 4   |
| LO Mon 2 -                           | white  | L         | EL3104 | 5      | -I4     | AI    | 11      | 23  |
| RF Mon 3 +                           | green  | L         | EL3104 | 6      | +I1     | AI    | 11      | 5   |
| RF Mon 3 -                           | white  | L         | EL3104 | 6      | -I1     | AI    | 11      | 24  |
| LO Mon 3 +                           | green  | L         | EL3104 | 6      | +I2     | AI    | 11      | 6   |
| LO Mon 3 -                           | white  | L         | EL3104 | 6      | -I2     | AI    | 11      | 25  |
| RF Mon 4 +                           | green  | L         | EL3104 | 6      | +I3     | AI    | 11      | 7   |
| RF Mon 4 -                           | white  | L         | EL3104 | 6      | -I3     | AI    | 11      | 26  |

|                            |       |   |        |    |     |    |    |    |
|----------------------------|-------|---|--------|----|-----|----|----|----|
| LO Mon 4 +                 | green | L | EL3104 | 6  | +I4 | AI | 11 | 8  |
| LO Mon 4 -                 | white | L | EL3104 | 6  | -I4 | AI | 11 | 27 |
| SVRET_2                    | black | L | EL1124 | 7  | -   | P  | 11 | 19 |
| OK1                        | brown | L | EL1124 | 7  | I1  | BI | 11 | 17 |
| Sign chn 1                 | brown | L | EL1124 | 7  | I2  | BI | 11 | 18 |
| Sign chn 2                 | brown | L | EL1124 | 7  | I3  | BI | 11 | 37 |
| OK2                        | brown | L | EL1124 | 7  | I4  | BI | 11 | 36 |
| <b>ASC Demodulators</b>    |       |   |        |    |     |    |    |    |
| RF Mon 1 +                 | green | L | EL3104 | 8  | +I1 | AI | 10 | 1  |
| RF Mon 1 -                 | white | L | EL3104 | 8  | -I1 | AI | 10 | 20 |
| LO Mon 1 +                 | green | L | EL3104 | 8  | +I2 | AI | 10 | 2  |
| LO Mon 1 -                 | white | L | EL3104 | 8  | -I2 | AI | 10 | 21 |
| RF Mon 2 +                 | green | L | EL3104 | 8  | +I3 | AI | 10 | 3  |
| RF Mon 2 -                 | white | L | EL3104 | 8  | -I3 | AI | 10 | 22 |
| LO Mon 2 +                 | green | L | EL3104 | 8  | +I4 | AI | 10 | 4  |
| LO Mon 2 -                 | white | L | EL3104 | 8  | -I4 | AI | 10 | 23 |
| RF Mon 3 +                 | green | L | EL3104 | 9  | +I1 | AI | 10 | 5  |
| RF Mon 3 -                 | white | L | EL3104 | 9  | -I1 | AI | 10 | 24 |
| LO Mon 3 +                 | green | L | EL3104 | 9  | +I2 | AI | 10 | 6  |
| LO Mon 3 -                 | white | L | EL3104 | 9  | -I2 | AI | 10 | 25 |
| RF Mon 4 +                 | green | L | EL3104 | 9  | +I3 | AI | 10 | 7  |
| RF Mon 4 -                 | white | L | EL3104 | 9  | -I3 | AI | 10 | 26 |
| LO Mon 4 +                 | green | L | EL3104 | 9  | +I4 | AI | 10 | 8  |
| LO Mon 4 -                 | white | L | EL3104 | 9  | -I4 | AI | 10 | 27 |
| RF Mon 5 +                 | green | L | EL3104 | 10 | +I1 | AI | 10 | 9  |
| RF Mon 5 -                 | white | L | EL3104 | 10 | -I1 | AI | 10 | 28 |
| LO Mon 5 +                 | green | L | EL3104 | 10 | +I2 | AI | 10 | 10 |
| LO Mon 5 -                 | white | L | EL3104 | 10 | -I2 | AI | 10 | 29 |
| RF Mon 6 +                 | green | L | EL3104 | 10 | +I3 | AI | 10 | 11 |
| RF Mon 6 -                 | white | L | EL3104 | 10 | -I3 | AI | 10 | 30 |
| LO Mon 6 +                 | green | L | EL3104 | 10 | +I4 | AI | 10 | 12 |
| LO Mon 6 -                 | white | L | EL3104 | 10 | -I4 | AI | 10 | 31 |
| RF Mon 7 +                 | green | L | EL3104 | 11 | +I1 | AI | 10 | 13 |
| RF Mon 7 -                 | white | L | EL3104 | 11 | -I1 | AI | 10 | 32 |
| LO Mon 7 +                 | green | L | EL3104 | 11 | +I2 | AI | 10 | 14 |
| LO Mon 7 -                 | white | L | EL3104 | 11 | -I2 | AI | 10 | 33 |
| RF Mon 8 +                 | green | L | EL3104 | 11 | +I3 | AI | 10 | 15 |
| RF Mon 8 -                 | white | L | EL3104 | 11 | -I3 | AI | 10 | 34 |
| LO Mon 8 +                 | green | L | EL3104 | 11 | +I4 | AI | 10 | 16 |
| LO Mon 8 -                 | white | L | EL3104 | 11 | -I4 | AI | 10 | 35 |
| <b>RF Amplifiers</b>       |       |   |        |    |     |    |    |    |
| Monitor 1 +                | green | L | EL3104 | 13 | +I1 | AI | 9  | 12 |
| Monitor 1 -                | white | L | EL3104 | 13 | -I1 | AI | 9  | 31 |
| Monitor 2 +                | green | L | EL3104 | 13 | +I2 | AI | 9  | 11 |
| Monitor 2 -                | white | L | EL3104 | 13 | -I2 | AI | 9  | 30 |
| Monitor 3 +                | green | L | EL3104 | 13 | +I3 | AI | 9  | 10 |
| Monitor 3 -                | white | L | EL3104 | 13 | -I3 | AI | 9  | 29 |
| Monitor 4 +                | green | L | EL3104 | 13 | +I4 | AI | 9  | 9  |
| Monitor 4 -                | white | L | EL3104 | 13 | -I4 | AI | 9  | 28 |
| SVRET_3                    | black | L | EL1124 | 14 | -   | P  | 9  | 19 |
| OK1                        | brown | L | EL1124 | 14 | I1  | BI | 9  | 37 |
| OK2                        | brown | L | EL1124 | 14 | I2  | BI | 9  | 17 |
| OK3                        | brown | L | EL1124 | 14 | I3  | BI | 9  | 34 |
| OK4                        | brown | L | EL1124 | 14 | I4  | BI | 9  | 14 |
| <b>TCS Hartmann Sensor</b> |       |   |        |    |     |    |    |    |
| Temperature Supply 1 +     | red   | L | EL3204 | 16 | +R1 | AI | 8  | 1  |
| Temperature Supply 1 -     | black | L | EL3204 | 16 | -R1 | AI | 8  | 20 |
| Temperature Readback 1 +   | green | L | EL3204 | 16 | +R1 | AI | 8  | 2  |
| Temperature Readback 1 -   | white | L | EL3204 | 16 | -R1 | AI | 8  | 21 |
| Temperature Supply 2 +     | red   | L | EL3204 | 16 | +R2 | AI | 8  | 3  |
| Temperature Supply 2 -     | black | L | EL3204 | 16 | -R2 | AI | 8  | 22 |
| Temperature Readback 2 +   | green | L | EL3204 | 16 | +R2 | AI | 8  | 4  |
| Temperature Readback 2 -   | white | L | EL3204 | 16 | -R2 | AI | 8  | 23 |
| SVRET_4                    | black | L | EL1124 | 17 | -   | P  | 8  | 19 |
| Flipper sensor 1           | brown | L | EL1124 | 17 | I1  | BI | 8  | 29 |

|                    |        |   |        |    |    |    |   |    |
|--------------------|--------|---|--------|----|----|----|---|----|
| Flipper sensor 2   | brown  | L | EL1124 | 17 | I2 | BI | 8 | 10 |
| Flipper sensor 3   | brown  | L | EL1124 | 17 | I3 | BI | 8 | 28 |
| Flipper sensor 4   | brown  | L | EL1124 | 17 | I4 | BI | 8 | 9  |
| Flipper actuator 1 | orange | L | EL2124 | 18 | O1 | BO | 8 | 31 |
| Flipper actuator 2 | orange | L | EL2124 | 18 | O2 | BO | 8 | 12 |
| Flipper actuator 3 | orange | L | EL2124 | 18 | O3 | BO | 8 | 30 |
| Flipper actuator 4 | orange | L | EL2124 | 18 | O4 | BO | 8 | 11 |

| End Station Controls Chassis 2     |        |      |        | Middle Rail |         |       |         |     |
|------------------------------------|--------|------|--------|-------------|---------|-------|---------|-----|
| Name                               | Color  | Rail | Module | Number      | Channel | Type  | Adapter | Pin |
| <b>Power</b>                       |        |      |        |             |         |       |         |     |
| 24V                                | violet | M    | OMRON  | DC_5        | 24V     | P     | TBLOCK  |     |
| 0V                                 | gray   | M    | OMRON  | DC_5        | 0V      | P     | TBLOCK  |     |
| 24V                                | violet | M    | EK1101 | 0           | 24V     | P     | TBLOCK  |     |
| 0V                                 | gray   | M    | EK1101 | 0           | 0V      | P     | TBLOCK  |     |
|                                    | red    | M    | EK1101 | 0           | +       | P     |         |     |
| GND                                | black  | M    | EK1101 | 0           | -       | P     | 7       | 19  |
| 5V_5                               | red    | M    | EL9190 | 6           | +       | P     | DC_5    | +V  |
| 5VRET_5                            | black  | M    | EL9190 | 6           | -       | P     | DC_5    | -V  |
| <b>Coupler</b>                     |        |      |        |             |         |       |         |     |
| Output                             | CAT5   | M    | EK1100 | 0           | X2      | Comm. | R/0     | X1  |
| <b>PZT Mirrors</b>                 |        |      |        |             |         |       |         |     |
| HV10 Monitor PZT 2X +              | green  | M    | EL3104 | 1           | +I1     | AI    | 7       | 4   |
| HV10 Monitor PZT 2X -              | white  | M    | EL3104 | 1           | -I1     | AI    | 7       | 23  |
| Position Sensor PZT 2X +           | green  | M    | EL3104 | 1           | +I2     | AI    | 7       | 3   |
| Position Sensor PZT 2X -           | white  | M    | EL3104 | 1           | -I2     | AI    | 7       | 22  |
| HV10 Monitor PZT 2Y +              | green  | M    | EL3104 | 1           | +I3     | AI    | 7       | 2   |
| HV10 Monitor PZT 2Y -              | white  | M    | EL3104 | 1           | -I3     | AI    | 7       | 21  |
| Position Sensor PZT 2Y +           | green  | M    | EL3104 | 1           | +I4     | AI    | 7       | 1   |
| Position Sensor PZT 2Y -           | white  | M    | EL3104 | 1           | -I4     | AI    | 7       | 20  |
| HV10 Monitor PZT 1X +              | green  | M    | EL3104 | 2           | +I1     | AI    | 7       | 8   |
| HV10 Monitor PZT 1X -              | white  | M    | EL3104 | 2           | -I1     | AI    | 7       | 27  |
| Position Sensor PZT 1X +           | green  | M    | EL3104 | 2           | +I2     | AI    | 7       | 7   |
| Position Sensor PZT 1X -           | white  | M    | EL3104 | 2           | -I2     | AI    | 7       | 26  |
| HV10 Monitor PZT 1Y +              | green  | M    | EL3104 | 2           | +I3     | AI    | 7       | 6   |
| HV10 Monitor PZT 1Y -              | white  | M    | EL3104 | 2           | -I3     | AI    | 7       | 25  |
| Position Sensor PZT 1Y +           | green  | M    | EL3104 | 2           | +I4     | AI    | 7       | 5   |
| Position Sensor PZT 1Y -           | white  | M    | EL3104 | 2           | -I4     | AI    | 7       | 24  |
| <b>Photodetector DC Monitors</b>   |        |      |        |             |         |       |         |     |
| PD Monitor 1 +                     | green  | M    | EL3104 | 3           | +I1     | AI    | 7       | 16  |
| PD Monitor 1 -                     | white  | M    | EL3104 | 3           | -I1     | AI    | 7       | 35  |
| PD Monitor 2 +                     | green  | M    | EL3104 | 3           | +I2     | AI    | 7       | 15  |
| PD Monitor 2 -                     | white  | M    | EL3104 | 3           | -I2     | AI    | 7       | 34  |
| PD Monitor 3 +                     | green  | M    | EL3104 | 3           | +I3     | AI    | 7       | 14  |
| PD Monitor 3 -                     | white  | M    | EL3104 | 3           | -I3     | AI    | 7       | 33  |
| PD Monitor 4 +                     | green  | M    | EL3104 | 3           | +I4     | AI    | 7       | 13  |
| PD Monitor 4 -                     | white  | M    | EL3104 | 3           | -I4     | AI    | 7       | 32  |
| PD Monitor 5 +                     | green  | M    | EL3104 | 4           | +I1     | AI    | 7       | 12  |
| PD Monitor 5 -                     | white  | M    | EL3104 | 4           | -I1     | AI    | 7       | 31  |
| PD Monitor 6 +                     | green  | M    | EL3104 | 4           | +I2     | AI    | 7       | 11  |
| PD Monitor 6 -                     | white  | M    | EL3104 | 4           | -I2     | AI    | 7       | 30  |
| PD Monitor 7 +                     | green  | M    | EL3104 | 4           | +I3     | AI    | 7       | 10  |
| PD Monitor 7 -                     | white  | M    | EL3104 | 4           | -I3     | AI    | 7       | 29  |
| PD Monitor 8 +                     | green  | M    | EL3104 | 4           | +I4     | AI    | 7       | 9   |
| PD Monitor 8 -                     | white  | M    | EL3104 | 4           | -I4     | AI    | 7       | 28  |
| <b>Laser Temperature Actuation</b> |        |      |        |             |         |       |         |     |
| Crystal temperature +              | blue   | M    | EL4132 | 5           | O1      | AO    | 7       | 18  |
| Crystal temperature -              | yellow | M    | EL4132 | 5           | COM     | AO    | 7       | 37  |
| Doubler temperature +              | blue   | M    | EL4132 | 5           | O2      | AO    | 7       | 17  |
| Doubler temperature -              | yellow | M    | EL4132 | 5           | COM     | AO    | 7       | 36  |
| <b>Auxiliary</b>                   |        |      |        |             |         |       |         |     |
| 5VRET_5                            | black  | M    | EL1124 | 7           | -       | P     | 6       | 19  |
| Aux BI 1                           | brown  | M    | EL1124 | 7           | I1      | BI    | 6       | 23  |
| Aux BI 2                           | brown  | M    | EL1124 | 7           | I2      | BI    | 6       | 4   |
| Aux BI 3                           | brown  | M    | EL1124 | 7           | I3      | BI    | 6       | 22  |
| Aux BI 4                           | brown  | M    | EL1124 | 7           | I4      | BI    | 6       | 3   |
| Aux BO 1                           | orange | M    | EL2124 | 8           | O1      | BO    | 6       | 21  |
| Aux BO 2                           | orange | M    | EL2124 | 8           | O2      | BO    | 6       | 2   |
| Aux BO 2                           | orange | M    | EL2124 | 8           | O3      | BO    | 6       | 20  |
| Aux BO 2                           | orange | M    | EL2124 | 8           | O4      | BO    | 6       | 1   |
| Aux AI 1 +                         | green  | M    | EL3104 | 9           | +I1     | AI    | 6       | 12  |
| Aux AI 1 -                         | white  | M    | EL3104 | 9           | -I1     | AI    | 6       | 31  |

|            |        |   |        |    |     |    |   |    |
|------------|--------|---|--------|----|-----|----|---|----|
| Aux AI 2 + | green  | M | EL3104 | 9  | +I2 | AI | 6 | 11 |
| Aux AI 2 - | white  | M | EL3104 | 9  | -I2 | AI | 6 | 30 |
| Aux AI 3 + | green  | M | EL3104 | 9  | +I3 | AI | 6 | 10 |
| Aux AI 3 - | white  | M | EL3104 | 9  | -I3 | AI | 6 | 29 |
| Aux AI 4 + | green  | M | EL3104 | 9  | +I4 | AI | 6 | 9  |
| Aux AI 4 - | white  | M | EL3104 | 9  | -I4 | AI | 6 | 28 |
| Aux AO 1 + | blue   | M | EL4134 | 10 | O1  | AO | 6 | 8  |
| Aux AO 1 - | yellow | M | EL4134 | 10 | COM | AO | 6 | 27 |
| Aux AO 2 + | blue   | M | EL4134 | 10 | O2  | AO | 6 | 7  |
| Aux AO 2 - | yellow | M | EL4134 | 10 | COM | AO | 6 | 26 |
| Aux AO 3 + | blue   | M | EL4134 | 10 | O3  | AO | 6 | 6  |
| Aux AO 3 - | yellow | M | EL4134 | 10 | COM | AO | 6 | 25 |
| Aux AO 4 + | blue   | M | EL4134 | 10 | O4  | AO | 6 | 5  |
| Aux AO 4 - | yellow | M | EL4134 | 10 | COM | AO | 6 | 24 |

| End Station Controls Chassis 2     |        | Right Rail |        |        |         |       |         |     |
|------------------------------------|--------|------------|--------|--------|---------|-------|---------|-----|
| Name                               | Color  | Rail       | Module | Number | Channel | Type  | Adapter | Pin |
| <b>Power</b>                       |        |            |        |        |         |       |         |     |
| 24V                                | violet | R          | OMRON  | DC_6   | 24V     | P     | TBLOCK  |     |
| 0V                                 | gray   | R          | OMRON  | DC_6   | 0V      | P     | TBLOCK  |     |
| 24V                                | violet | R          | EK1101 | 0      | 24V     | P     | TBLOCK  |     |
| 0V                                 | gray   | R          | EK1101 | 0      | 0V      | P     | TBLOCK  |     |
| 24V                                | violet | R          | EK1101 | 0      | +       | P     | TBLOCK  |     |
| 0V                                 | gray   | R          | EK1101 | 0      | -       | P     | TBLOCK  |     |
| 5V_6                               | red    | R          | EL9190 | 11     | +       | P     | DC_6    | +V  |
| 5VRET_6                            | black  | R          | EL9190 | 11     | -       | P     | DC_6    | -V  |
| 24V                                | violet | M          | EL9400 | 14     | 24V     | P     | TBLOCK  |     |
| 0V                                 | gray   | M          | EL9400 | 14     | 0V      | P     | TBLOCK  |     |
| 5V_7                               | red    | M          | EL9400 | 14     | +       | P     | DC_7    | +V  |
| 5VRET_7                            | black  | M          | EL9400 | 14     | -       | P     | DC_7    | -V  |
| 24V                                | violet | R          | OMRON  | DC_7   | 24V     | P     | TBLOCK  |     |
| 0V                                 | gray   | R          | OMRON  | DC_7   | 0V      | P     | TBLOCK  |     |
| <b>Coupler</b>                     |        |            |        |        |         |       |         |     |
| Output                             | CAT5   | R          | EK1100 | 0      | X2      | Comm. | OUT     |     |
| <b>Beam Diverter</b>               |        |            |        |        |         |       |         |     |
| 24V(*)                             | violet | M          | EL7332 | 1      | +       | P     | TBLOCK  |     |
| 0V(*)                              | gray   | M          | EL7332 | 1      | -       | P     | TBLOCK  |     |
| Motor A +(*)                       | violet | M          | EL7332 | 1      | A1      | P     | A       | 1   |
| Motor A -(*)                       | gray   | M          | EL7332 | 1      | A2      | P     | A       | 6   |
| Motor B +                          | violet | M          | EL7332 | 1      | B1      | P     |         |     |
| Motor B -                          | gray   | M          | EL7332 | 1      | B2      | P     |         |     |
| Encoder A                          | violet | M          | EL7332 | 1      | B1      | P     |         |     |
| Encoder B                          | gray   | M          | EL7332 | 1      | B2      | P     |         |     |
| End switch 1                       | brown  | M          | EL1094 | 2      | I1      | BI    | A       | 2   |
| 0V                                 | gray   | M          | EL1094 | 2      | -       | P     | A       | 7   |
| End switch 2                       | brown  | M          | EL1094 | 2      | I2      | BI    | A       | 3   |
| 0V                                 | gray   | M          | EL1094 | 2      | -       | P     | A       | 8   |
|                                    | brown  | M          | EL1094 | 2      | I3      | BI    |         |     |
| 0V                                 | gray   | M          | EL1094 | 2      | -       | P     |         |     |
|                                    | brown  | M          | EL1094 | 2      | I4      | BI    |         |     |
| 0V                                 | gray   | M          | EL1094 | 2      | -       | P     |         |     |
| <b>Picomotor Controller A (**)</b> |        |            |        |        |         |       |         |     |
| 0V                                 | gray   | R          | EL3102 | 3      | COM     | P     | TBLOCK  |     |
| Temperature Monitor 1 +            | green  | R          | EL3102 | 3      | +I1     | AI    | 1       | 6   |
| Temperature Monitor 1 -            | white  | R          | EL3102 | 3      | -I1     | AI    | 1       | 5   |
| Temperature Monitor 2 +            | green  | R          | EL3102 | 3      | +I2     | AI    | 1       | 4   |
| Temperature Monitor 2 -            | white  | R          | EL3102 | 3      | -I2     | AI    | 1       | 3   |
| Driver Fault 1                     | brown  | R          | EL1014 | 4      | I1      | BI    | 1       | 10  |
| Driver Fault 2                     | brown  | R          | EL1014 | 4      | I2      | BI    | 1       | 9   |
| Remote ON                          | brown  | R          | EL1014 | 4      | I3      | BI    | 1       | 8   |
| Power ON                           | brown  | R          | EL1014 | 4      | I4      | BI    | 1       | 7   |
| Readbacks                          | IDC    | R          | EL1872 | 7      | X1      | BI    | 1       | P12 |
| 24V                                | violet | R          | EL1872 | 7      | 1       | P     | TBLOCK  |     |
| 0V                                 | gray   | R          | EL1872 | 7      | 2       | P     | TBLOCK  |     |
| Controls                           | IDC    | R          | EL2872 | 8      | X1      | BO    | 1       | P11 |
| 24V                                | violet | R          | EL2872 | 8      | 1       | P     | TBLOCK  |     |
| 0V                                 | gray   | R          | EL2872 | 8      | 2       | P     | TBLOCK  |     |
| <b>Picomotor Controller B (**)</b> |        |            |        |        |         |       |         |     |
| 0V                                 | gray   | R          | EL3102 | 5      | COM     | P     | TBLOCK  |     |
| Temperature Monitor 1 +            | green  | R          | EL3102 | 5      | +I1     | AI    | 2       | 6   |
| Temperature Monitor 1 -            | white  | R          | EL3102 | 5      | -I1     | AI    | 2       | 5   |
| Temperature Monitor 2 +            | green  | R          | EL3102 | 5      | +I2     | AI    | 2       | 4   |
| Temperature Monitor 2 -            | white  | R          | EL3102 | 5      | -I2     | AI    | 2       | 3   |
| Driver Fault 1                     | brown  | R          | EL1014 | 6      | I1      | BI    | 2       | 10  |
| Driver Fault 2                     | brown  | R          | EL1014 | 6      | I2      | BI    | 2       | 9   |
| Remote ON                          | brown  | R          | EL1014 | 6      | I3      | BI    | 2       | 8   |
| Power ON                           | brown  | R          | EL1014 | 6      | I4      | BI    | 2       | 7   |
| Readbacks                          | IDC    | R          | EL1872 | 9      | X1      | BI    | 2       | P12 |
| 24V                                | violet | R          | EL1872 | 9      | 1       | P     | TBLOCK  |     |

|                        |        |   |        |    |     |    |        |     |
|------------------------|--------|---|--------|----|-----|----|--------|-----|
| 0V                     | gray   | R | EL1872 | 9  | 2   | P  | TBLOCK |     |
| Controls               | IDC    | R | EL2872 | 10 | X1  | BO | 2      | P11 |
| 24V                    | violet | R | EL2872 | 10 | 1   | P  | TBLOCK |     |
| 0V                     | gray   | R | EL2872 | 10 | 2   | P  | TBLOCK |     |
| <b>Shutter Control</b> |        |   |        |    |     |    |        |     |
| 5VRET_6                | black  | M | EL1124 | 12 | -   | P  | B      | 8   |
| Shutter 1 Monitor      | brown  | M | EL1124 | 12 | I1  | BI | B      | 5   |
| Shutter 2 Monitor      | brown  | M | EL1124 | 12 | I2  | BI | B      | 13  |
|                        | brown  | M | EL1124 | 12 | I3  | BI | B      |     |
|                        | brown  | M | EL1124 | 12 | I4  | BI | B      |     |
| Shutter 1 Close        | orange | M | EL2124 | 13 | O1  | BO | B      | 6   |
| Shutter 2 Close        | orange | M | EL2124 | 13 | O2  | BO | B      | 14  |
| Shutter 1 Open         | orange | M | EL2124 | 13 | O3  | BO | B      | 7   |
| Shutter 2 Open         | orange | M | EL2124 | 13 | O4  | BO | B      | 15  |
| <b>Legacy PD</b>       |        |   |        |    |     |    |        |     |
| DC Mon 1 +             | green  | R | EL3104 | 15 | +I1 | AI | 3      | 1   |
| DC Mon 1 -             | white  | R | EL3104 | 15 | -I1 | AI | 3      | 20  |
| Temp Mon 1 +           | green  | R | EL3104 | 15 | +I2 | AI | 3      | 5   |
| Temp Mon 1 -           | white  | R | EL3104 | 15 | -I2 | AI | 3      | 24  |
| DC Mon 2 +             | green  | R | EL3104 | 15 | +I3 | AI | 3      | 2   |
| DC Mon 2 -             | white  | R | EL3104 | 15 | -I3 | AI | 3      | 21  |
| Temp Mon 2 +           | green  | R | EL3104 | 15 | +I4 | AI | 3      | 6   |
| Temp Mon 2 -           | white  | R | EL3104 | 15 | -I4 | AI | 3      | 25  |
| DC Mon 3 +             | green  | R | EL3104 | 16 | +I1 | AI | 3      | 3   |
| DC Mon 3 -             | white  | R | EL3104 | 16 | -I1 | AI | 3      | 22  |
| Temp Mon 3 +           | green  | R | EL3104 | 16 | +I2 | AI | 3      | 7   |
| Temp Mon 3 -           | white  | R | EL3104 | 16 | -I2 | AI | 3      | 26  |
| DC Mon 4 +             | green  | R | EL3104 | 16 | +I3 | AI | 3      | 4   |
| DC Mon 4 -             | white  | R | EL3104 | 16 | -I3 | AI | 3      | 23  |
| Temp Mon 4 +           | green  | R | EL3104 | 16 | +I4 | AI | 3      | 8   |
| Temp Mon 4 -           | white  | R | EL3104 | 16 | -I4 | AI | 3      | 27  |
| WFS 1 DC 1 +           | green  | R | EL3104 | 17 | +I1 | AI | 3      | 10  |
| WFS 1 DC 1 -           | white  | R | EL3104 | 17 | -I1 | AI | 3      | 29  |
| WFS 1 DC 2 +           | green  | R | EL3104 | 17 | +I2 | AI | 3      | 11  |
| WFS 1 DC 2 -           | white  | R | EL3104 | 17 | -I2 | AI | 3      | 30  |
| WFS 1 DC 3 +           | green  | R | EL3104 | 17 | +I3 | AI | 3      | 12  |
| WFS 1 DC 3 -           | white  | R | EL3104 | 17 | -I3 | AI | 3      | 31  |
| WFS 1 DC 4 +           | green  | R | EL3104 | 17 | +I4 | AI | 3      | 13  |
| WFS 1 DC 4 -           | white  | R | EL3104 | 17 | -I4 | AI | 3      | 32  |
| WFS 2 DC 1 +           | green  | R | EL3104 | 18 | +I1 | AI | 3      | 15  |
| WFS 2 DC 1 -           | white  | R | EL3104 | 18 | -I1 | AI | 3      | 34  |
| WFS 2 DC 2 +           | green  | R | EL3104 | 18 | +I2 | AI | 3      | 16  |
| WFS 2 DC 2 -           | white  | R | EL3104 | 18 | -I2 | AI | 3      | 35  |
| WFS 2 DC 3 +           | green  | R | EL3104 | 18 | +I3 | AI | 3      | 17  |
| WFS 2 DC 3 -           | white  | R | EL3104 | 18 | -I3 | AI | 3      | 36  |
| WFS 2 DC 4 +           | green  | R | EL3104 | 18 | +I4 | AI | 3      | 18  |
| WFS 2 DC 4 -           | white  | R | EL3104 | 18 | -I4 | AI | 3      | 37  |
| 5VRET_7                | black  | R | EL1124 | 19 | -   | P  | 3      | 9   |
| OK                     | brown  | R | EL1124 | 19 | I1  | BI | 3      | 28  |
|                        | brown  | R | EL1124 | 19 | I2  | BI | 3      |     |
|                        | brown  | R | EL1124 | 19 | I3  | BI | 3      |     |
|                        | brown  | R | EL1124 | 19 | I4  | BI | 3      |     |

\* use AWG16 hookup wire

\*\* Terminal order is out-of sequence between the two picomotor controllers (EL1872 and EL2872 are clustered at the end)