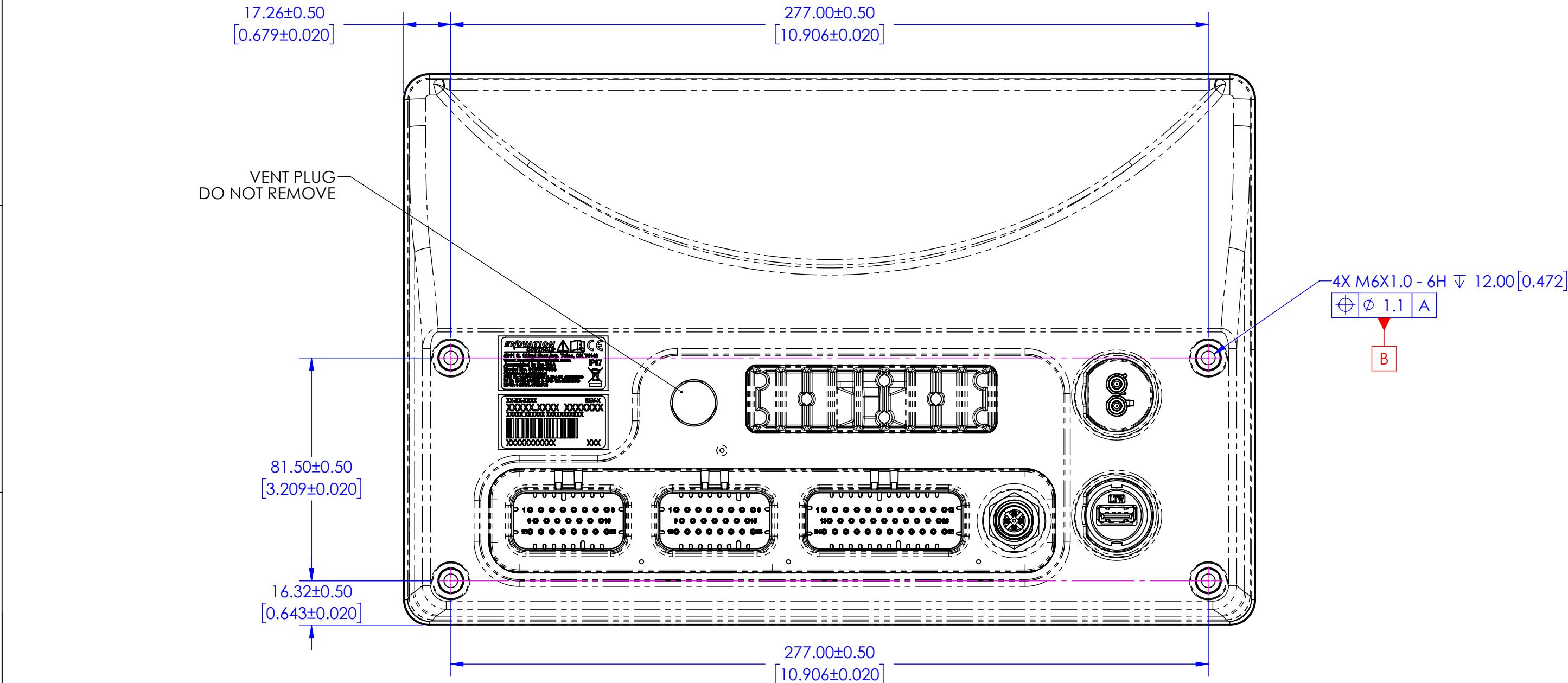
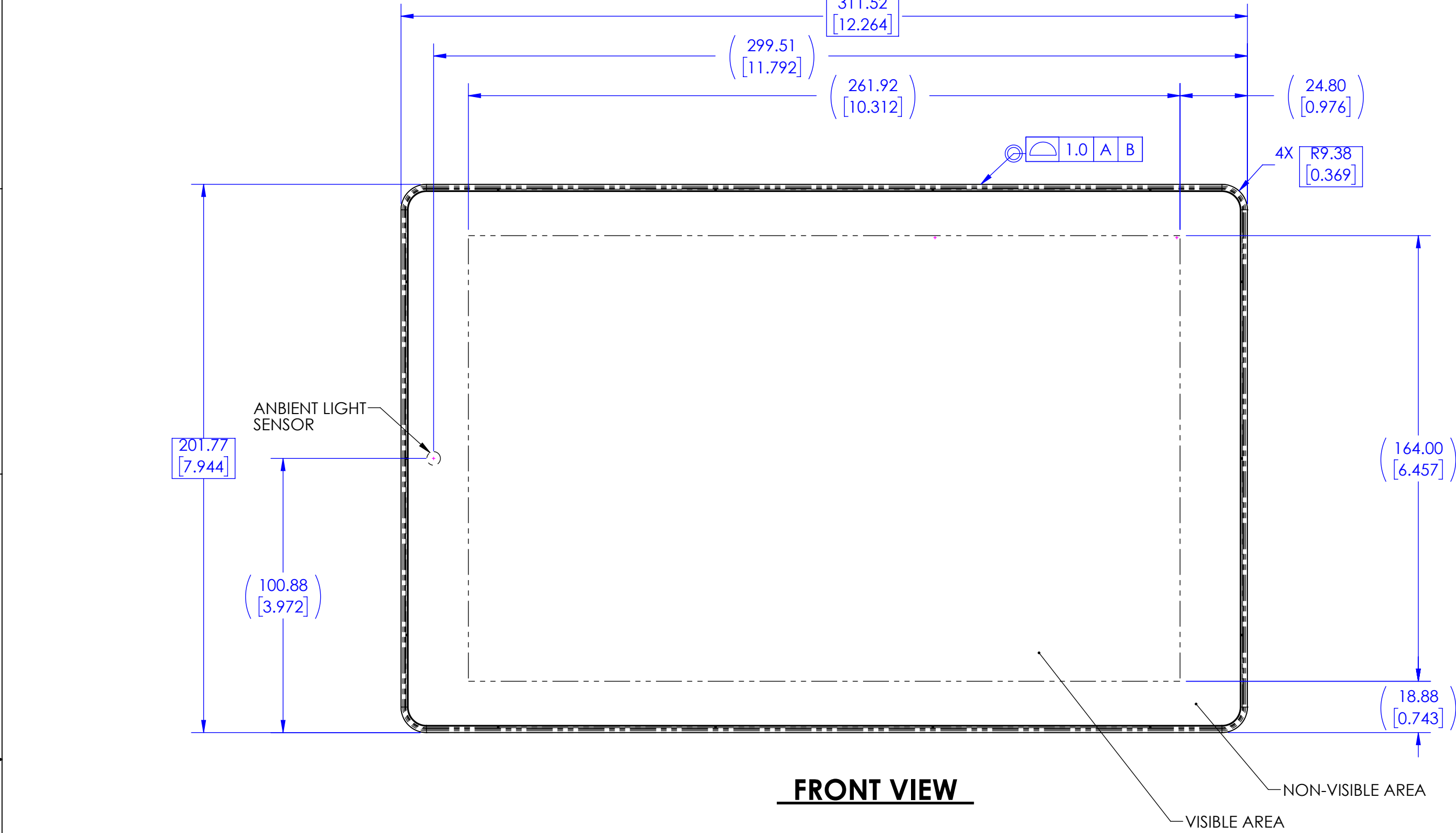
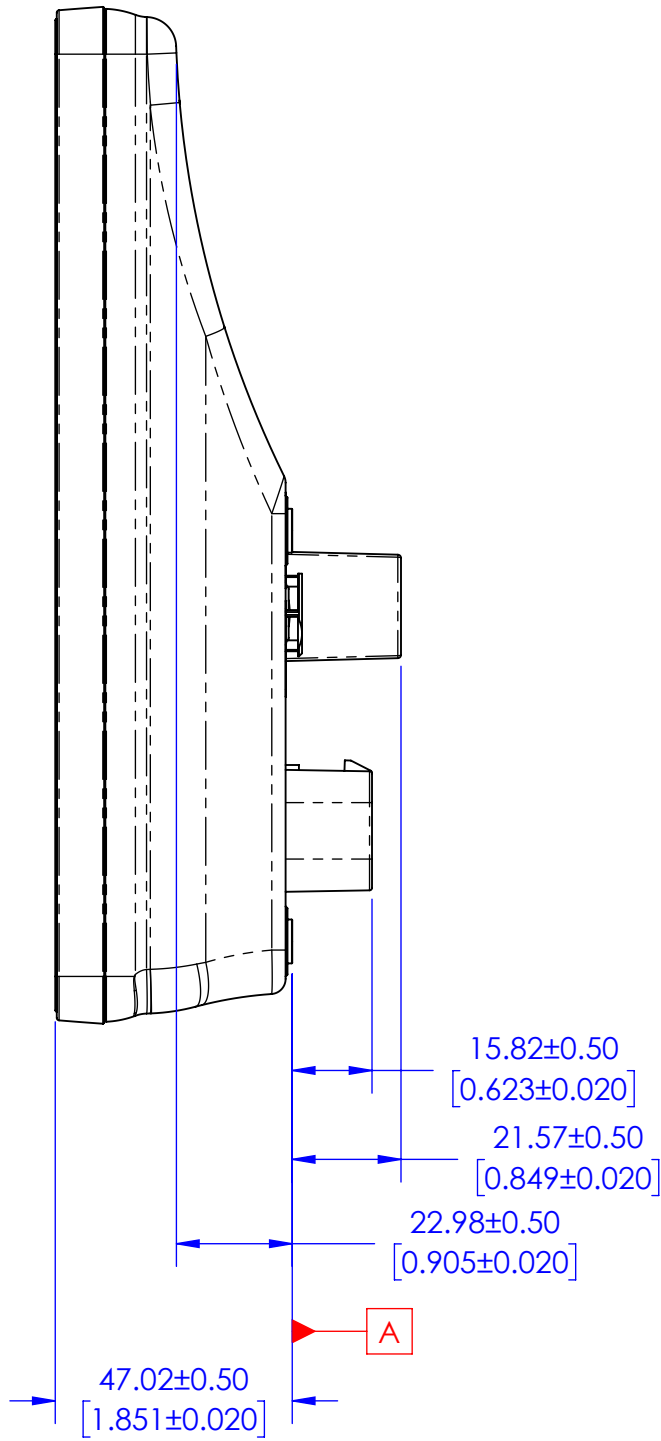




| REVISIONS |      |        |                                                         |                   |          |
|-----------|------|--------|---------------------------------------------------------|-------------------|----------|
| ZONE      | REV. | ECO#   | DESCRIPTION                                             | DATE [YYYY.MM.DD] | BY APPVD |
| -         | A-   | C05800 | INITIAL DRAWING RELEASE                                 | 2023.06.16        | JP LB    |
| -         | A1   | C05866 | ADDED HOW TO ORDER VARIANT FOR EMBEDDED MAPS (SHEET 2)  | 2023.07.26        | JP LB    |
| -         | A2   | C06645 | ADDED PIN OUT SPEC FOR FAKRA CONNECTOR (SHEET 3)        | 2024.10.23        | JP VE    |
| -         | A3   | C07232 | CUSTOMER MODEL ADDED TO AGILE - NO CHANGES TO DRAWING   | 2025.09.15        | JP JA    |
| -         | A4   | C07496 | UPDATED DESCRIPTION; PRODUCT NAME WAS PROJECT CODE NAME | 2026.02.12        | JP SL    |

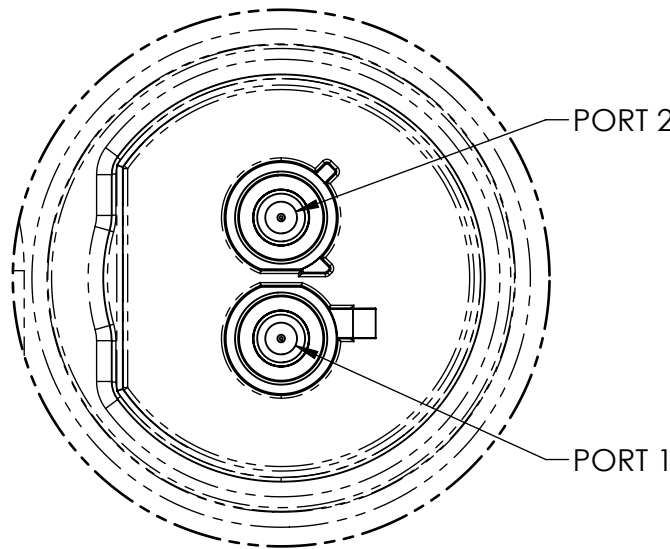
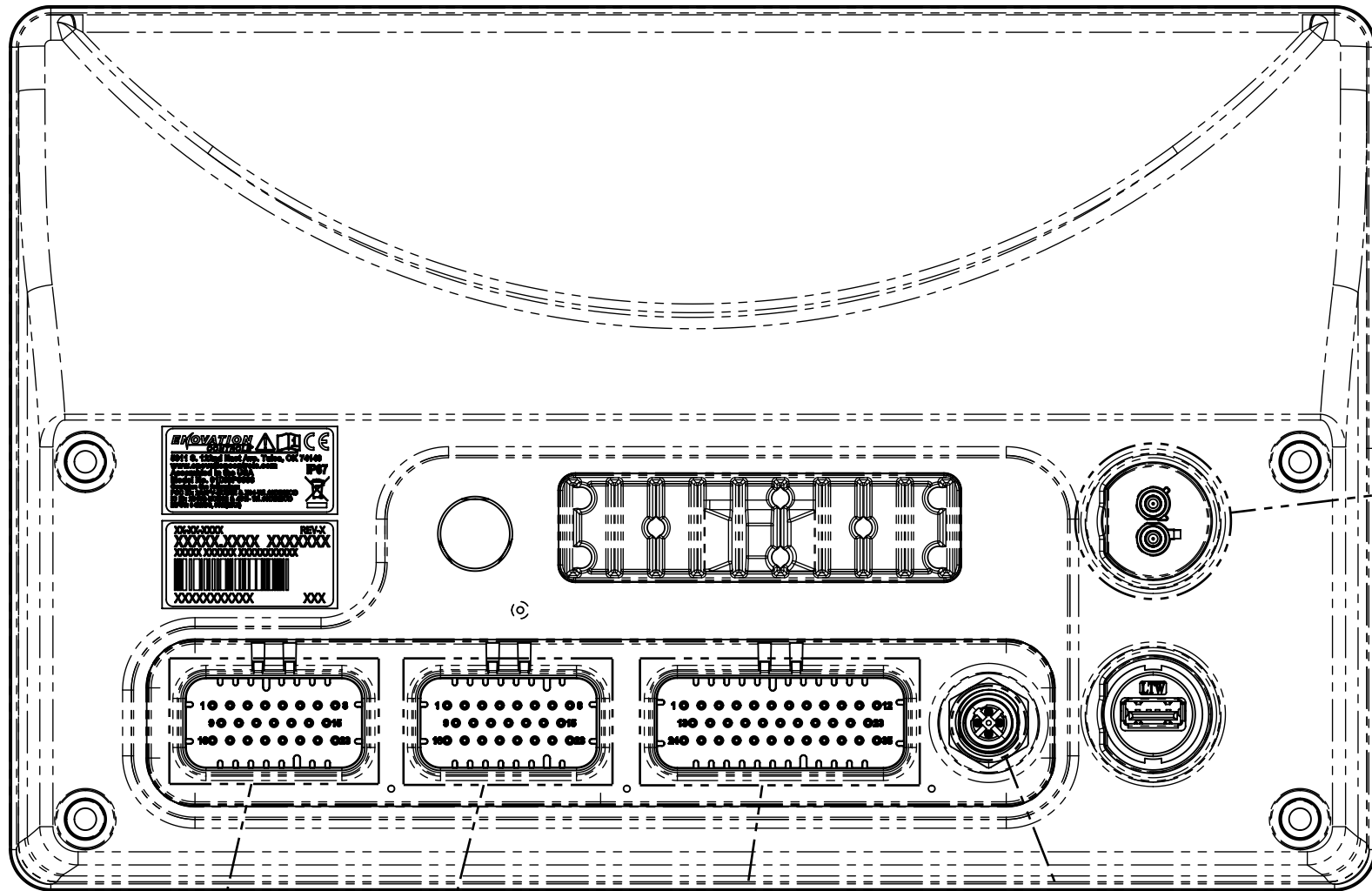


- NOTES:
- REFER TO ENOVATION CONTROLS 3D CAD MODEL 78020680 FOR NON DIMENSIONED FEATURES.
- $\nabla$  2.0 A B APPLIES TO ALL UNDIMENSIONED GEOMETRY FROM THE TRUE SURFACE.

|                                                                                                                                              |  |                                                                               |  |                                             |  |
|----------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|---------------------------------------------|--|
| DIMENSIONING AND TOLERANCING PER ASME Y14.5 - 2009 APPLY.<br>UNLESS OTHERWISE SPECIFIED<br>Tolerances Inch: X ± .1<br>XX ± .03<br>XXX ± .010 |  | Tolerances Metric: X ± .2<br>XX ± .7<br>XXX ± .25                             |  | ANGLES ± 2°<br>✓ 125                        |  |
| MATERIAL:<br>-                                                                                                                               |  | SHALL MEET REQUIREMENTS OF ENC 4E00711 ENVIRONMENTAL COMPLIANCE SPECIFICATION |  | PRODUCE PART FROM CAD MODEL 78020681.SLDASM |  |
| FINISH:<br>-                                                                                                                                 |  | PART NUMBER<br>78020681                                                       |  | DRAWING NUMBER<br>78020681                  |  |
|                                                                                                                                              |  | SCALE<br>1:1.5 AND NOTED                                                      |  | SHEET SIZE<br>A2                            |  |
|                                                                                                                                              |  | SHEET<br>1 OF 4                                                               |  | REVISION<br>A4                              |  |

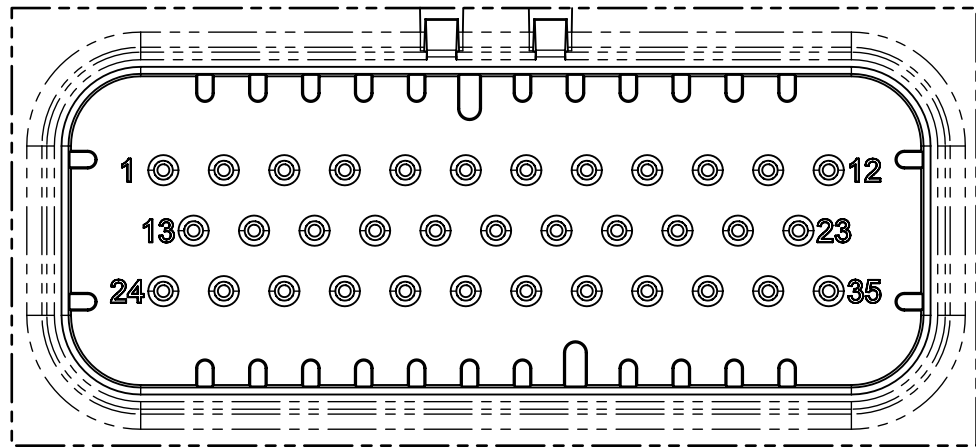
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |                                                                                                                                                                                                                                                                                                                                                                             |                |                                                                                                                                                                                                                                                                                                                                                                                                |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 | 3                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6 | DRAWING NUMBER<br>78020681                                                                                                                                                                                                                                                                                                                                                  | REVISION<br>A4 |                                                                                                                                                                                                                                                                                                                                                                                                |  |
| <div>HOW TO ORDER</div> <div>PV-U120L-TSA5-XXXX</div> <div>PLATFORM OPTIONS<br/>QDAB = DAB+ (Digital Audio Broadcast)<br/>QWX = Weather Band<br/>QWXM-1 = Embedded Maps North America</div>                                                                                                                                                                                                                                                                                                                                                                                                                                            |   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |                                                                                                                                                                                                                                                                                                                                                                             |                |                                                                                                                                                                                                                                                                                                                                                                                                |  |
| <div>ELECTRICAL &amp; ENVIRONMENTAL SPECIFICATIONS</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   |                                                                                                                                                                                                                                                                                                                                                                             |                |                                                                                                                                                                                                                                                                                                                                                                                                |  |
| <div>HARDWARE</div> <div>DISPLAY:<br/>12" (133.38mm (H) X 355.68mm (V)) LVDS TT LCD with LED backlight</div> <div>COLOR:<br/>24-bit color</div> <div>RESOLUTION:<br/>1280 X 800 PIXELS</div> <div>CONTRAST RATIO:<br/>1000:1 (Typ.)</div> <div>BRIGHTNESS:<br/>1000 cd/m2</div> <div>DISPLAY SURFACE:<br/>Anti-glare</div> <div>TOUCH PANEL:<br/>Glove touch PCAP</div> <div>REAL TIME CLOCK:<br/>Li-Ion battery backup</div> <div>CONNECTORS:<br/>(2) Ampseal 23 pin<br/>(1) Ampseal 35 pin<br/>(1) M12 4 pin<br/>(1) USB Pig tail<br/>(1) Radio Antenna Jack</div> <div>VIDEO INPUTS:<br/>3 NTSC/PAL (Single channel viewable)</div> |   | <div>COMMUNICATION</div> <div>CAN:<br/>(2) CAN 2.0B according to ISO-11898-2; J1939 and CANopen; proprietary messaging</div> <div>SERIAL:<br/>(1) RS-485 Serial (MODBUS master/slave)</div> <div>USB:<br/>(2) USB 2.0 Full Speed Host</div> <div>ETHERNET:<br/>(1) Ethernet 10/100 Base-T</div> <div>WIFI:<br/>802.11 b/g radio</div> <div>BLUETOOTH:<br/>Fully integrated Bluetooth 2.1 class 1</div> <div>AUDIO BUS:<br/>(1) A2B</div> |   | <div>INFOTAINMENT</div> <div>STEREO:<br/>(4) Outputs (20Hz-20KHz)<br/>(1) Subwoofer (configurable, 30Hz-250Hz)<br/>(2) Auxiliary Inputs<br/>(3) Amp Turn On/Accessory</div> <div>FM TUNER:<br/>Frequency Range: 87.9MHz-107.9MHz</div> <div>AM TUNER:<br/>Frequency Range: 530kHz-1710kHz</div> <div>WX TUNER: (WX OPTION)<br/>Frequency Range: 162.4MHz-162.55MHz</div> <div>DAB+ TUNER: (DAB OPTION)<br/>Frequency Range: 170MHz-240MHz</div> <div>USB MEDIA:<br/>MP3, M4A Playback</div> <div>BLUETOOTH:<br/>Audio Streaming</div> |   | <div>ELECTRICAL</div> <div>OPERATING VOLTAGE:<br/>6 - 36 VDC, reverse polarity protected</div> <div>OUTPUTS:<br/>(1) 500mA Switched Low-side<br/>(1) Frequency Out (2Hz - 3KHz)</div> <div>INPUTS:<br/>(3) Analog 0-5VDC, 4-20mA, or resistive, 10-bit resolution<br/>(5) Discrete digital, active-high<br/>(1) Frequency In (2Hz - 10kHz) 5Vpk-pk min, 120Vpk-pk max</div> |                | <div>ENVIRONMENTAL</div> <div>OPERATING:<br/>-40°C to +70°C [-40°F to +158°F]</div> <div>STORAGE:<br/>-40°C to +85°C [-40°F to +185°F]</div> <div>PROTECTION:<br/>IP66 and IP67, front and back, for outdoor use</div> <div>VIBRATION:<br/>ISO 15003: 3.9 Grms (10 - 350Hz), 3 axis</div> <div>SHOCK:<br/>±50G in 3 axis</div> <div>EMC/EMI:<br/>SAE J1113, ISO 13766, CE per 2014/30/EU</div> |  |
| <div>TECH SPECS, PV-U120L-TSA5</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                          |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |   | <div><div><div>PART NUMBER<br/>78020681</div><div>CAD FILE<br/>78020681.SLDASM</div></div><div><div>DRAWING NUMBER<br/>78020681</div><div>SCALE<br/>1:5 AND NOTED</div></div><div><div>REVISION</div><div>SHEET SIZE<br/>A3</div><div>SHEET<br/>2 OF 4</div></div><div>A4</div></div>                                                                                       |                |                                                                                                                                                                                                                                                                                                                                                                                                |  |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2 | 3                                                                                                                                                                                                                                                                                                                                                                                                                                        | 4 | 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 6 |                                                                                                                                                                                                                                                                                                                                                                             |                |                                                                                                                                                                                                                                                                                                                                                                                                |  |

CONNECTOR PIN-OUT SPECIFICATIONS



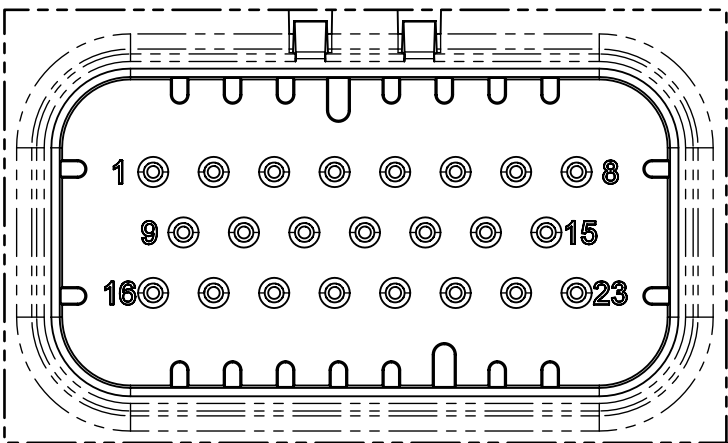
DETAIL E  
SCALE 2 : 1

| ANTENNA, 8MM PITCH FAKRA<br>DUAL "B"<br>(REF. MATING CONNECTOR<br>ROSENBERGER 59Z115-000B) |                                               |
|--------------------------------------------------------------------------------------------|-----------------------------------------------|
| PORT #                                                                                     | FUNCTION                                      |
| 1                                                                                          | Primary In - 12V Powered,<br>AM/FM/DAB Band 3 |
| 2                                                                                          | Secondary In - FM Band 2                      |



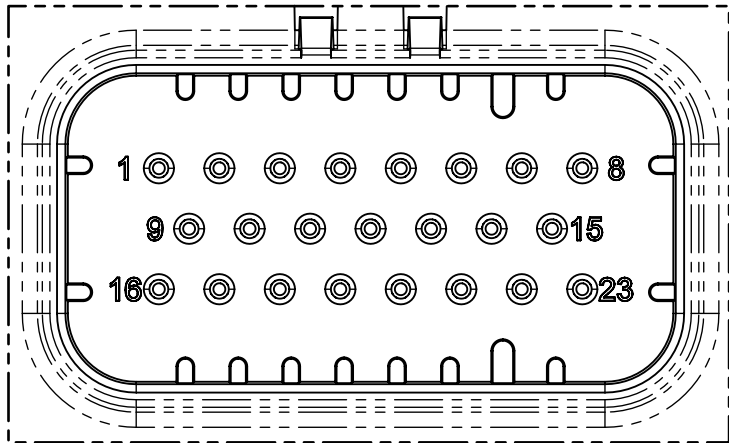
DETAIL C  
SCALE 2 : 1

| 35-POS CONNECTOR-C<br>(MATING CONNECTOR AMP 776164-1 BLACK) |                        |
|-------------------------------------------------------------|------------------------|
| PIN #                                                       | FUNCTION               |
| 1                                                           | Video In 4 P           |
| 2                                                           | Video In 4 N           |
| 3                                                           | A2B P                  |
| 4                                                           | A2B N                  |
| 5                                                           | Line In 1 Left         |
| 6                                                           | Line In 1 Left Return  |
| 7                                                           | Line In 1 Right        |
| 8                                                           | Line In 1 Right Return |
| 9                                                           | Line In 2 Left         |
| 10                                                          | Line In 2 Left Return  |
| 11                                                          | Line In 2 Right        |
| 12                                                          | Line In 2 Right Return |
| 13                                                          | A2B Shield             |
| 14                                                          | A2B Ground             |
| 15                                                          | A2B 5V                 |
| 16                                                          | Line Out 5 Left P      |
| 17                                                          | Line Out 5 Left N      |
| 18                                                          | Line Out 4 Left P      |
| 19                                                          | Line Out 4 Left N      |
| 20                                                          | Line Out 3 Left P      |
| 21                                                          | Line Out 3 Left N      |
| 22                                                          | Line Out 2 Left N      |
| 23                                                          | Line Out 2 Left P      |
| 24                                                          | Amp Turn-on 3          |
| 25                                                          | Amp Turn-on 2          |
| 26                                                          | Amp Turn-on 1          |
| 27                                                          | No Connect             |
| 28                                                          | Line Out 5 Right P     |
| 29                                                          | Line Out 5 Right N     |
| 30                                                          | Line Out 4 Right P     |
| 31                                                          | Line Out 4 Right N     |
| 32                                                          | Line Out 3 Right P     |
| 33                                                          | Line Out 3 Right N     |
| 34                                                          | Line Out 2 Right P     |
| 35                                                          | Line Out 2 Right N     |



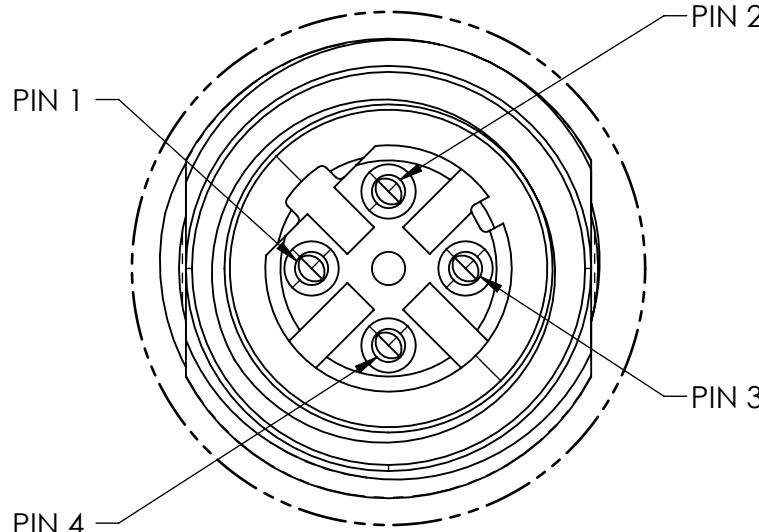
DETAIL A  
SCALE 2 : 1

| 23-POS CONNECTOR-A<br>(MATING CONNECTOR AMP 770680-1 BLACK) |                    |
|-------------------------------------------------------------|--------------------|
| PIN #                                                       | FUNCTION           |
| 1                                                           | Digital In 1       |
| 2                                                           | Analog In 3        |
| 3                                                           | Analog In 2        |
| 4                                                           | Analog In 1        |
| 5                                                           | CAN 1 L            |
| 6                                                           | CAN 1 H            |
| 7                                                           | Battery            |
| 8                                                           | Ground             |
| 9                                                           | Analog In 3 Return |
| 10                                                          | Analog In 2 Return |
| 11                                                          | Analog In 1 Return |
| 12                                                          | Digital In 3       |
| 13                                                          | Digital In 2       |
| 14                                                          | Frequency Out 1    |
| 15                                                          | Ignition           |
| 16                                                          | No Connect         |
| 17                                                          | No Connect         |
| 18                                                          | CAN 2 L            |
| 19                                                          | CAN 2 H            |
| 20                                                          | Digital In 4       |
| 21                                                          | Digital In 5       |
| 22                                                          | Open Drain Out     |
| 23                                                          | Frequency Out 2    |



DETAIL B  
SCALE 2 : 1

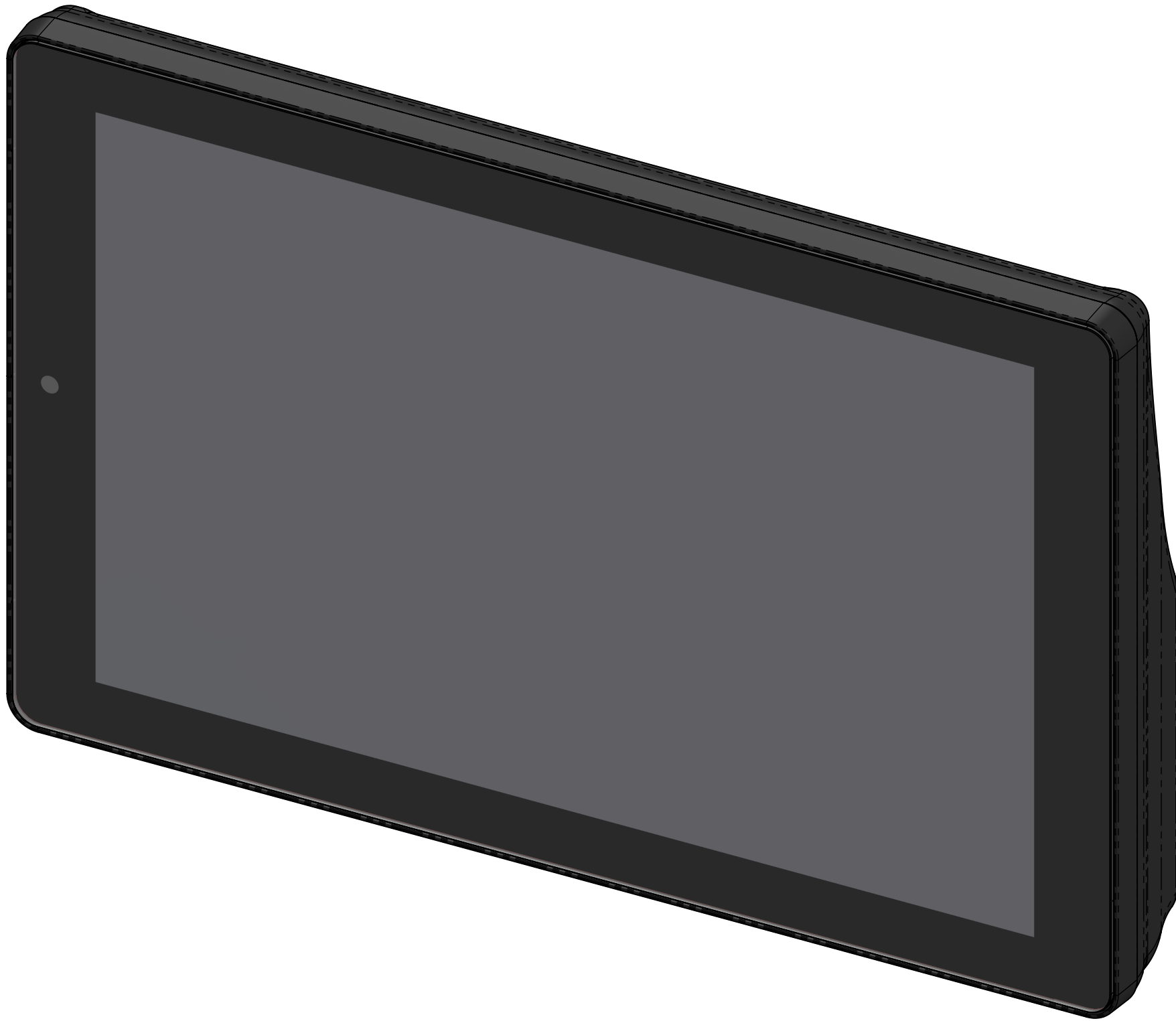
| 23-POS CONNECTOR-B<br>(MATING CONNECTOR AMP 770680-4 GRAY) |                      |
|------------------------------------------------------------|----------------------|
| PIN #                                                      | FUNCTION             |
| 1                                                          | Video In 1 P         |
| 2                                                          | Video In 2 P         |
| 3                                                          | Video In 3 P         |
| 4                                                          | RS485 H              |
| 5                                                          | RS485 L              |
| 6                                                          | Line Out 1 Right N   |
| 7                                                          | Line Out 1 Right P   |
| 8                                                          | Line Out 1 Left N    |
| 9                                                          | Video In 1 N         |
| 10                                                         | Video In 2 N         |
| 11                                                         | Video In 3 N         |
| 12                                                         | Radio Control VIN    |
| 13                                                         | Frequency In         |
| 14                                                         | Frequency In Return  |
| 15                                                         | Line Out 1 Left P    |
| 16                                                         | USB1 N               |
| 17                                                         | USB1 P               |
| 18                                                         | USB1 VBUS            |
| 19                                                         | USB1 Ground          |
| 20                                                         | USB1 Shield          |
| 21                                                         | Radio Control Bus    |
| 22                                                         | Radio Control Shield |
| 23                                                         | Radio Control Ground |



DETAIL D  
SCALE 4 : 1

| 4-POS CONNECTOR-D<br>(MATING CONNECTOR M-12, 4 POS,<br>D-CODED, MALE) |              |
|-----------------------------------------------------------------------|--------------|
| PIN #                                                                 | FUNCTION     |
| 1                                                                     | Ethernet TX+ |
| 2                                                                     | Ethernet RX+ |
| 3                                                                     | Ethernet TX- |
| 4                                                                     | Ethernet RX- |

TECH SPECS, PV-U120L-TSA5



TECH SPECS, PV-U120L-TSA5

| PART NUMBER     |  | DRAWING NUMBER   |  | REVISION |  |
|-----------------|--|------------------|--|----------|--|
| 78020681        |  | 78020681         |  | A4       |  |
| CAD FILE        |  | SCALE            |  | SHEET    |  |
| 78020681.SLDASM |  | 1:1.25 AND NOTED |  | 4 OF 4   |  |