



IDENTIFICATION

## APPLICATIONS

Tracking and Traceability is a primary need of tire manufactures. In logistics, WIP, quality control, and compliance, tires get tracked at every step of production process. Starting with raw materials through tire assembly, to the end-of-line sorting, reading the bar-code on tires is critical. But reading a bar-code on tires is a difficult task: it calls for omni-directional reading of low aspect ratio codes, whose quality degenerates during the manufacturing process. If the correct scanning technology is not applied, it may result in loss of production efficiency, additional manual handling, and extra costs for compliance management.

**STS400™** is the first-in-class solution to effectively address the demanding requirements of Tire Tracking and Traceability.

## ADVANTAGES

**STS400™** is extremely compact and based on a self-contained structure.

The solution excels in delivering top reading performance with simplicity of installation and maintenance.

For example the solution is pre-assembled and calibrated, making integration into a tire sorting system quicker than ever. In less than one hour, with no special tools or training, the **STS400™** can go from the shipping carton to reading tires in the production line! highest throughput and maximum ease of use.

## HIGHLIGHTS

- **Excellent performance**
  - Motion Speed and Coverage
  - Reading robustness
  - Factory performance validation
- **Easy to Install**
  - Out-of-the box solution
  - Self-contained system, maximum integration
- **Easy to Maintain**
  - MATRIX 410™ ATS - Factory Assembly
  - Automatic reader replacement
  - Unrivalled long term reliability

## GENERAL DESCRIPTION

### ONE SOLUTION-ONE PART NUMBER

Each complete STS400™ solution has a single order number. Matching the application requirements to the solution selection is an easy process. All that's needed are the bar-code resolution and the conveyor width. STS400™ means saving installation costs and time – 100% pre-assembled and calibrated – no focusing, no height barrier and no encoder required. The high read rates are guaranteed by the factory validated reading performance. Also the self-contained mechanical layout makes the integration into constrained spaces quick and easy. The complete reading system fits into a space only: 1065 x 223 x 149 mm – 42 X 9 x 6 in (cables, connection boxes, and readers included).

### EASY TO MAINTAIN

Thanks to the absence of moving parts, STS400™ requires minimum maintenance.

Detecting a reading problem is simple with the Green Spot feature: a flashing green light indicates the good read at the single device level, so providing an immediate feedback of the reading status without any additional software tools.

The automatic reader replacement function allows substituting a faulty reader by simply connecting a new MATRIX 410™ to the cluster. The mechanical fixture of the reader to the bar has also been simplified for improved precision.

Moreover, the factory assembly eliminates any setup activity on site and prevents any risk of error.



## READING DIAGRAMS

| PN        | DESCRIPTION | READERS | CODE RESOLUTION | FOCUS DISTANCE | MIN READING DISTANCE | MAX READING DISTANCE | VERTICAL FOV @MIN DISTANCE | HORIZONTAL FOV @MIN DISTANCE |
|-----------|-------------|---------|-----------------|----------------|----------------------|----------------------|----------------------------|------------------------------|
|           |             | qty     | mm (mils)       | mm (in)        | mm (in)              | mm (in)              | mm (in)                    | mm (in)                      |
| 937401023 | STS400-005  | 5       | 0.30<br>(12)    | 1065<br>(41.9) | 890<br>(35)          | 1140<br>(44.9)       | 184<br>(7.2)               | 805 (31.7)                   |
| 937401024 | STS400-006  | 6       |                 |                |                      |                      |                            | 945 (37.2)                   |
| 937401025 | STS400-007  | 7       |                 |                |                      |                      |                            | 1005 (42.7)                  |
| 937401026 | STS400-008  | 8       |                 |                |                      |                      |                            | 1225 (48.2)                  |
| 937401027 | STS400-015  | 5       | 0.25<br>(10)    | 788<br>(31)    | 710<br>(28)          | 910<br>(35.8)        | 146<br>(5.7)               | 635 (25)                     |
| 937401028 | STS400-016  | 6       |                 |                |                      |                      |                            | 745 (29.3)                   |
| 937401029 | STS400-017  | 7       |                 |                |                      |                      |                            | 855 (33.7)                   |
| 937401030 | STS400-018  | 8       |                 |                |                      |                      |                            | 965 (38)                     |

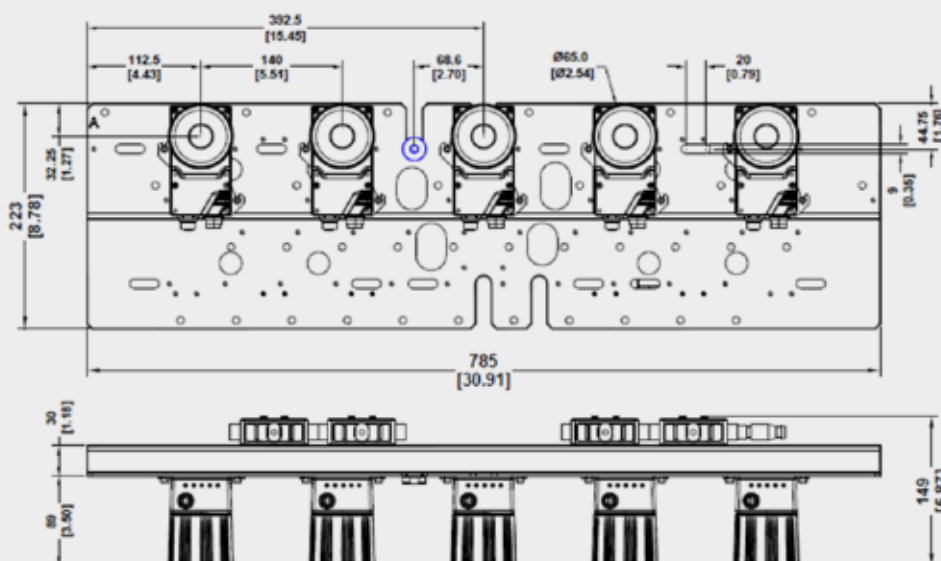
| PN        | DESCRIPTION | READERS | CODE RESOLUTION | FOCUS DISTANCE | MIN READING DISTANCE | MAX READING DISTANCE | VERTICAL FOV @MIN DISTANCE | HORIZONTAL FOV @MIN DISTANCE |
|-----------|-------------|---------|-----------------|----------------|----------------------|----------------------|----------------------------|------------------------------|
|           |             | qty     | mm (mils)       | mm (in)        | mm (in)              | mm (in)              | mm (in)                    | mm (in)                      |
| 937401037 | STS400-105  | 5       | 0.35<br>(14)    | 1065<br>(41.9) | 890<br>(34.6)        | 1280<br>(50.4)       | 184<br>(7.2)               | 805 (31.7)                   |
| 937401038 | STS400-106  | 6       |                 |                |                      |                      |                            | 945 (37.2)                   |
| 937401039 | STS400-107  | 7       |                 |                |                      |                      |                            | 1005 (42.7)                  |
| 937401040 | STS400-108  | 8       |                 |                |                      |                      |                            | 1225 (48.2)                  |
| 937401085 | STS400-115  | 5       | 0.25<br>(10)    | 1080<br>(42.5) | 930<br>(36.6)        | 1310<br>(51.6)       | 143<br>(5.7)               | 625 (24.6)                   |
| 937401086 | STS400-116  | 6       |                 |                |                      |                      |                            | 735 (28.9)                   |
| 937401087 | STS400-117  | 7       |                 |                |                      |                      |                            | 845 (33.3)                   |
| 937401088 | STS400-118  | 8       |                 |                |                      |                      |                            | 955 (37.6)                   |

| PN        | DESCRIPTION | READERS | CODE RESOLUTION | FOCUS DISTANCE | MIN READING DISTANCE | MAX READING DISTANCE | VERTICAL FOV @MIN DISTANCE | HORIZONTAL FOV @MIN DISTANCE |
|-----------|-------------|---------|-----------------|----------------|----------------------|----------------------|----------------------------|------------------------------|
|           |             | qty     | mm (mils)       | mm (in)        | mm (in)              | mm (in)              | mm (in)                    | mm (in)                      |
| 937400018 | STS400-205  | 5       | 0.30<br>(12)    | 380<br>(15)    | 317<br>(12.5)        | 457<br>(18)          | 145<br>(5.7)               | 754 (29.7)                   |
| 937400019 | STS400-206  | 6       |                 |                |                      |                      |                            | 894 (35.2)                   |

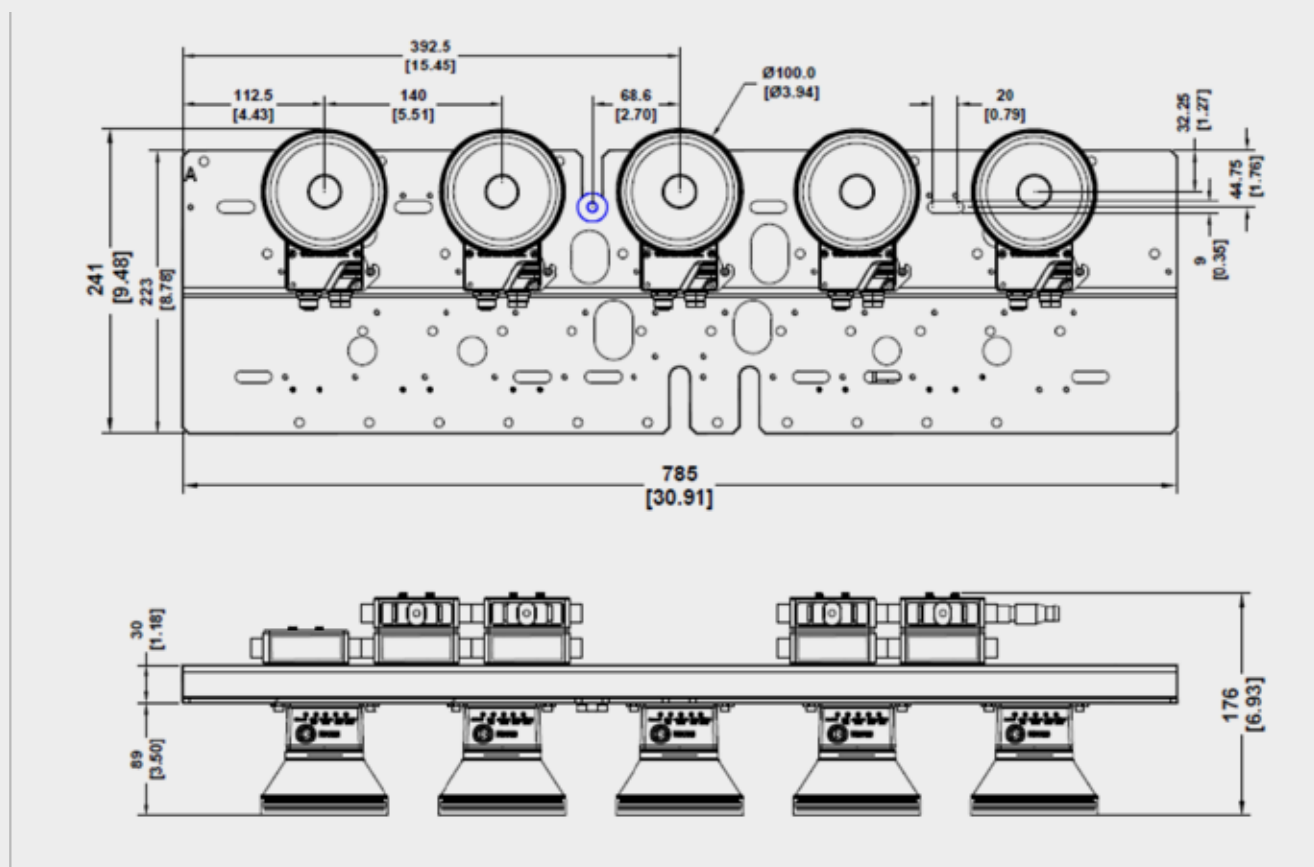
| PN        | DESCRIPTION | READERS | CODE RESOLUTION | FOCUS DISTANCE | MIN READING DISTANCE | MAX READING DISTANCE | VERTICAL FOV @MIN DISTANCE | HORIZONTAL FOV @MIN DISTANCE |
|-----------|-------------|---------|-----------------|----------------|----------------------|----------------------|----------------------------|------------------------------|
|           |             | qty     | mm (mils)       | mm (in)        | mm (in)              | mm (in)              | mm (in)                    | mm (in)                      |
| 937400020 | STS400-305  | 5       | 0.30<br>(12)    | 483<br>(19)    | 405<br>(15.9)        | 560<br>(22)          | 141<br>(5.6)               | 748 (29.4)                   |
| 937400021 | STS400-306  | 6       |                 |                |                      |                      |                            | 888 (35)                     |

## DIMENSIONS

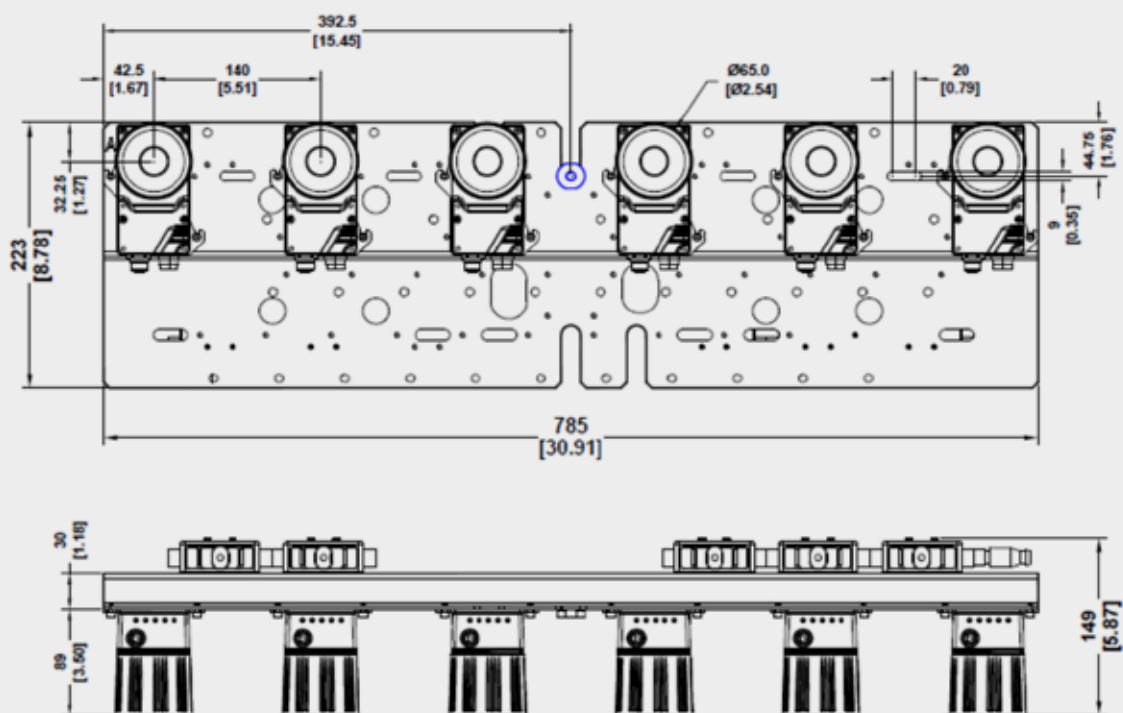
STS400-005, STS400-205, STS400-305



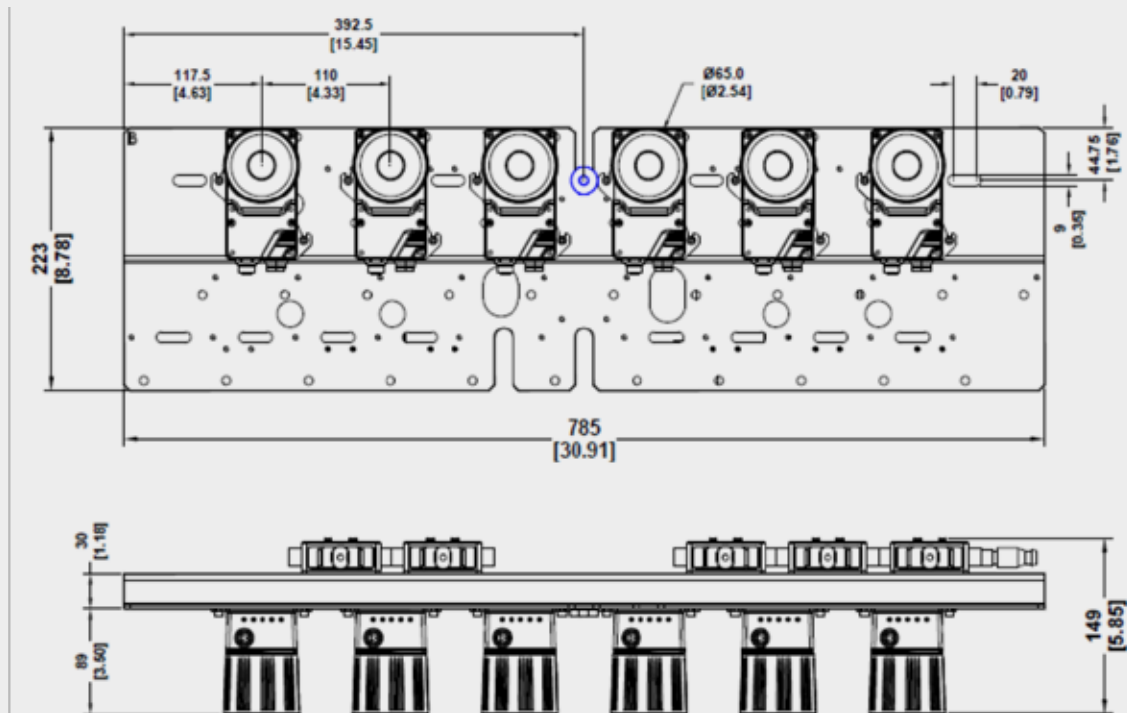
STS400-105



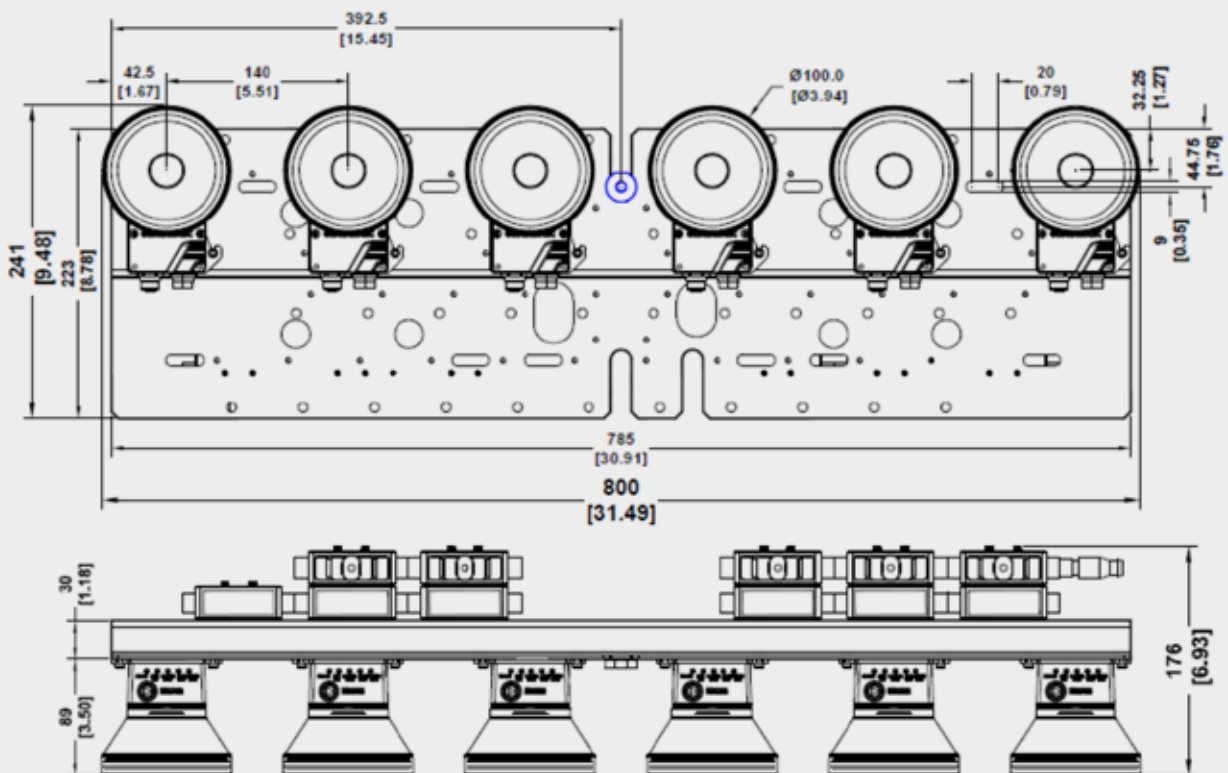
STS400-006, STS400-206, STS400-306



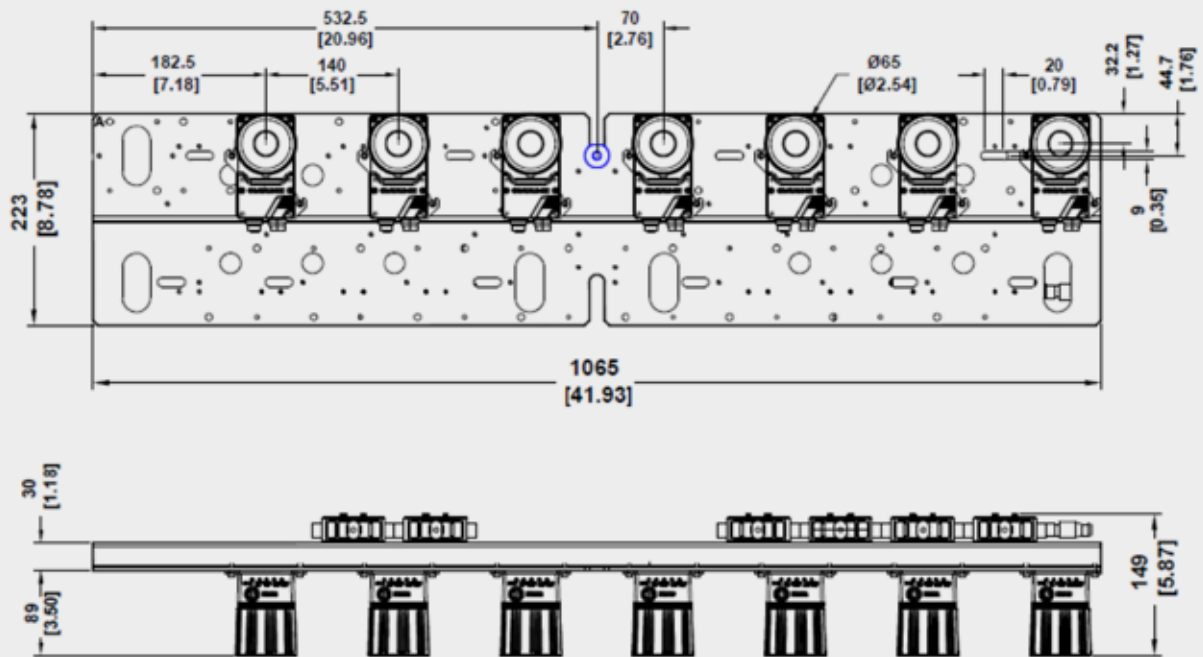
STS400-016



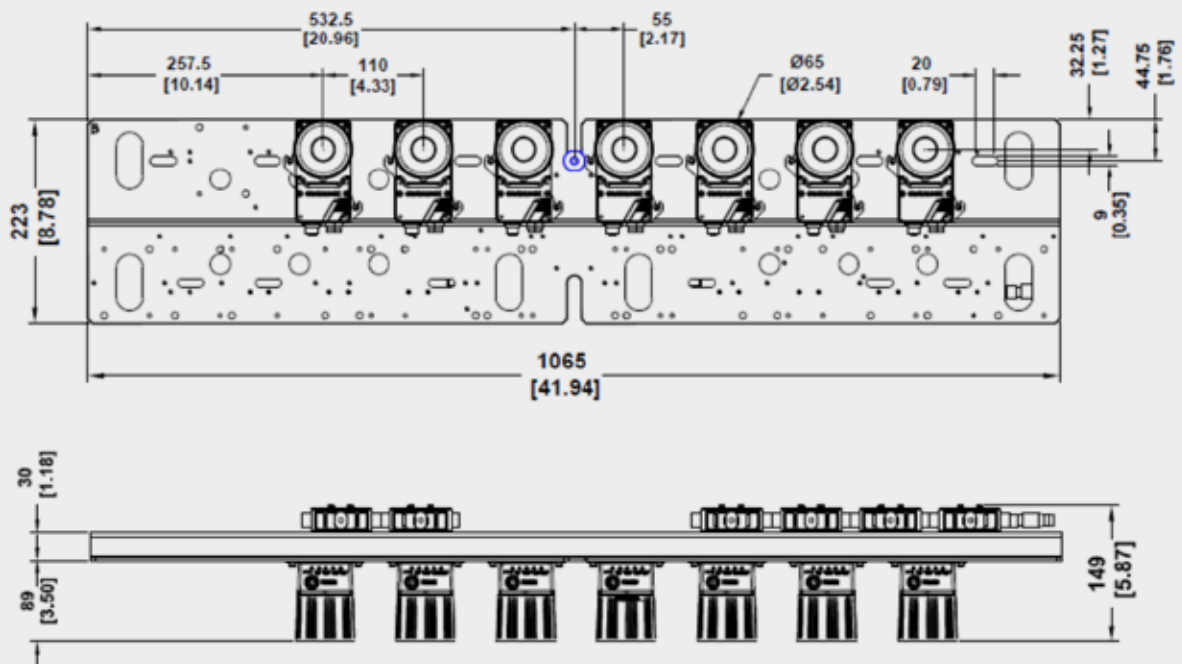
STS400-106



STS400-007



STS400-017



## TECHNICAL DATA

## Electrical features

|                |        |
|----------------|--------|
| Power          |        |
| Supply Voltage | 24 Vdc |
| Consumption    |        |

## Communication Interfaces

|                                      |                                              |
|--------------------------------------|----------------------------------------------|
| Main<br>-RS232<br>-RS485 full-duplex | 2400 to 115200 bit/s<br>2400 to 115200 bit/s |
| Auxiliary -RS232                     | 2400 to 115200 bit/s                         |
| ID-NET™                              | Up to 1MBaud                                 |
| Ethernet                             | 10/100Mbit/s                                 |

## Inputs

|                                        |                                       |
|----------------------------------------|---------------------------------------|
| Input 1 (External Trigger) and Input 2 | Opto-coupled and polarity insensitive |
| Max. Voltage                           | 30 Vdc                                |
| Max. Input Current                     | 10 mA                                 |

## Outputs

|                                      |              |
|--------------------------------------|--------------|
| Output 1 and Output 2                | Opto-coupled |
| $V_{out}$ ( $I_{Load} = 0$ mA) Max.  | 30 Vdc       |
| $V_{out}$ ( $I_{Load} = 10$ mA) Max. | 1.8 Vdc      |
| $P_D = V_{out} \times I_{Load}$ Max. | 170 mW       |

## Optical features

|                 |                       |
|-----------------|-----------------------|
| Image Sensor    | CCD                   |
| Image Format    | UXGA (1600x1200)      |
| Frame rate      | 15 frames/sec.        |
| Pitch           | ±35°                  |
| Tilt            | 0°-360°               |
| Lighting system | Internal Illuminator  |
| Led Emission    | according to EN 62471 |

## Environmental features

|                             |                              |
|-----------------------------|------------------------------|
| Operating Temperature       | 0° to 50 °C (32 to 122 °F)   |
| Storage Temperature         | -20° to 70 °C (-4 to 158 °F) |
| Max. Humidity               | 90% non condensing           |
| Protection Class - EN 60529 | IP65                         |

\* when correctly connected to cables with seals and protection caps.

## PHYSICAL FEATURES

### Dimensions

|                        |                                               |
|------------------------|-----------------------------------------------|
| STS400-0x4, -0x5, -0x6 | 785 x 223 x 149 mm (30.91 x 8.78 x 5.87 in.)  |
| STS400-1x5             | 785 x 241 x 176 mm (30.91 x 9.49 x 6.93 in.)  |
| STS400-1x6             | 800 x 241 x 176 mm (31.50 x 9.49 x 6.93 in.)  |
| STS400-0x7, -0x8       | 1065 x 223 x 149 mm (41.93 x 8.78 x 5.87 in.) |
| STS400-1x7             | 1072 x 241 x 176 mm (42.20 x 9.49 x 6.93 in.) |
| STS400-1x8             | 1080 x 241 x 176 mm (42.52 x 9.49 x 6.93 in.) |

### WEIGHT

|                              |                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------|
| Mounting Plate               | 5-6 readers 4100 g (9.04 lbs)<br>7-8 readers 5450 g (12.02 lbs)                                  |
| Reader + Bracket             | Matrix 410 ATS-000 about 610 g (1.34 lbs) each<br>Matrix 410 ATS-100 about 880 g (1.94 lbs) each |
| Pre-mounted Cables           | CAB-MS003 100 g (3.53 oz) each<br>CAB-L003 66 g (2.33 oz) each                                   |
| ID-NET Cables and Terminator | CBL-1480-003 48 g (1.69 oz) each<br>CBL-1490 Terminator 16 g (0.56 oz)                           |
| QLs                          | QLs QL100 115 g (4.06 oz) each<br>QL150 123 g (4.34 oz) each                                     |

To calculate the weight of your specific STS400 model, add the weights of the individual components from those listed above in the quantity present on your model.

## SOFTWARE FEATURES

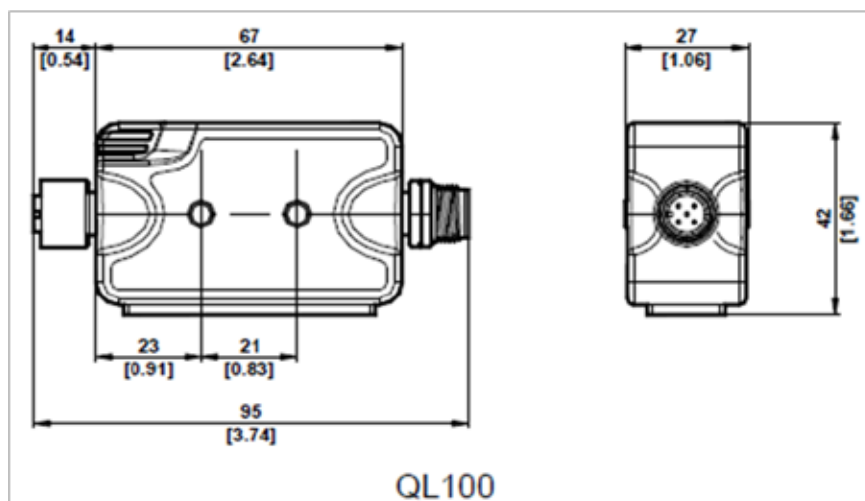
### Readable Code Symbolologies

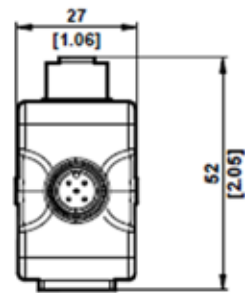
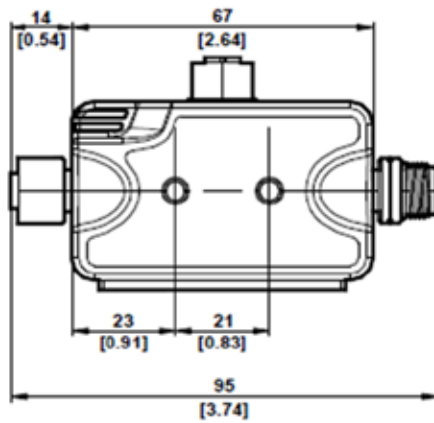
| 1-D and stacked                                                                                                                                                                                                                                                                                                                                                                                                                                    | 2-D                                                                                                                                                                                                                                    | POSTAL                                                                                                                                                                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>PDF417 Standard and Micro PDF417</li> <li>Code 128 (GS1-128)</li> <li>Code 39 (Standard and Full ASCII)</li> <li>Code 32</li> <li>MSI</li> <li>Standard 2 of 5</li> <li>Matrix 2 of 5</li> <li>Interleaved 2 of 5</li> <li>Codabar</li> <li>Code 93</li> <li>Pharmacode</li> <li>EAN-8/13 - UPC-A/E (including Addon 2 and Addon 5)</li> <li>GS1 DataBar Family</li> <li>Composite Symbolologies</li> </ul> | <ul style="list-style-type: none"> <li>Data Matrix ECC 200</li> <li>(Standard, GS1 and Direct Marking)</li> <li>QR Code</li> <li>(Standard and Direct Marking)</li> <li>Micro QR Code</li> <li>MAXICODE</li> <li>Aztec Code</li> </ul> | <ul style="list-style-type: none"> <li>Australia Post</li> <li>Royal Mail 4 State Customer</li> <li>Kix Code</li> <li>Japan Post</li> <li>PLANET</li> <li>POSTNET</li> <li>POSTNET (+BB)</li> <li>Intelligent Mail</li> <li>Swedish Post</li> </ul> |

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Operating Mode        | PHASE MODE                                                                                        |
| Configuration Methods | Windows-based SW (VisiSet™) via serial or Ethernet link<br>Serial Host Mode Programming sequences |
| Parameter Storage     | Permanent memory (Flash)                                                                          |

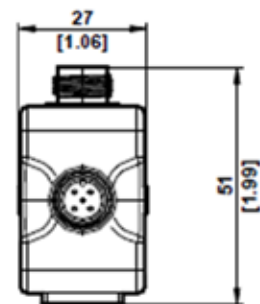
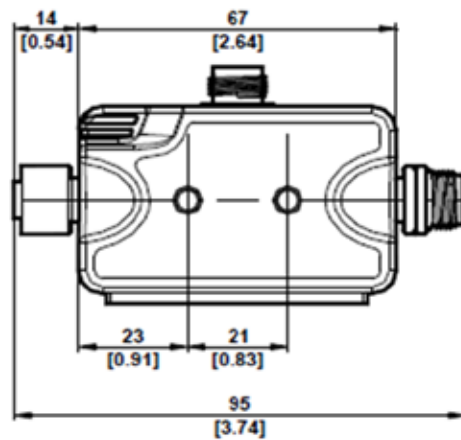
### USER INTERFACE

|                |                                                                            |
|----------------|----------------------------------------------------------------------------|
| LED Indicators | Power, Ready, Good; Trigger; Com, Status, (Ethernet Network); (Green Spot) |
|----------------|----------------------------------------------------------------------------|

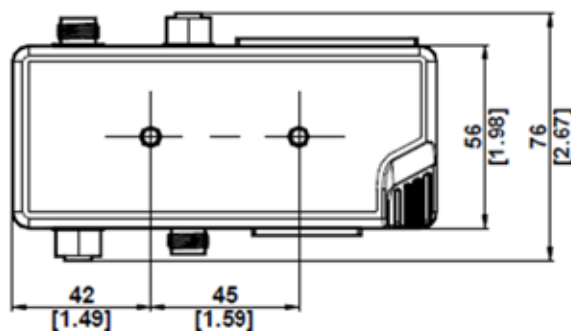
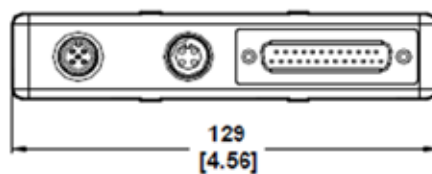




QL150

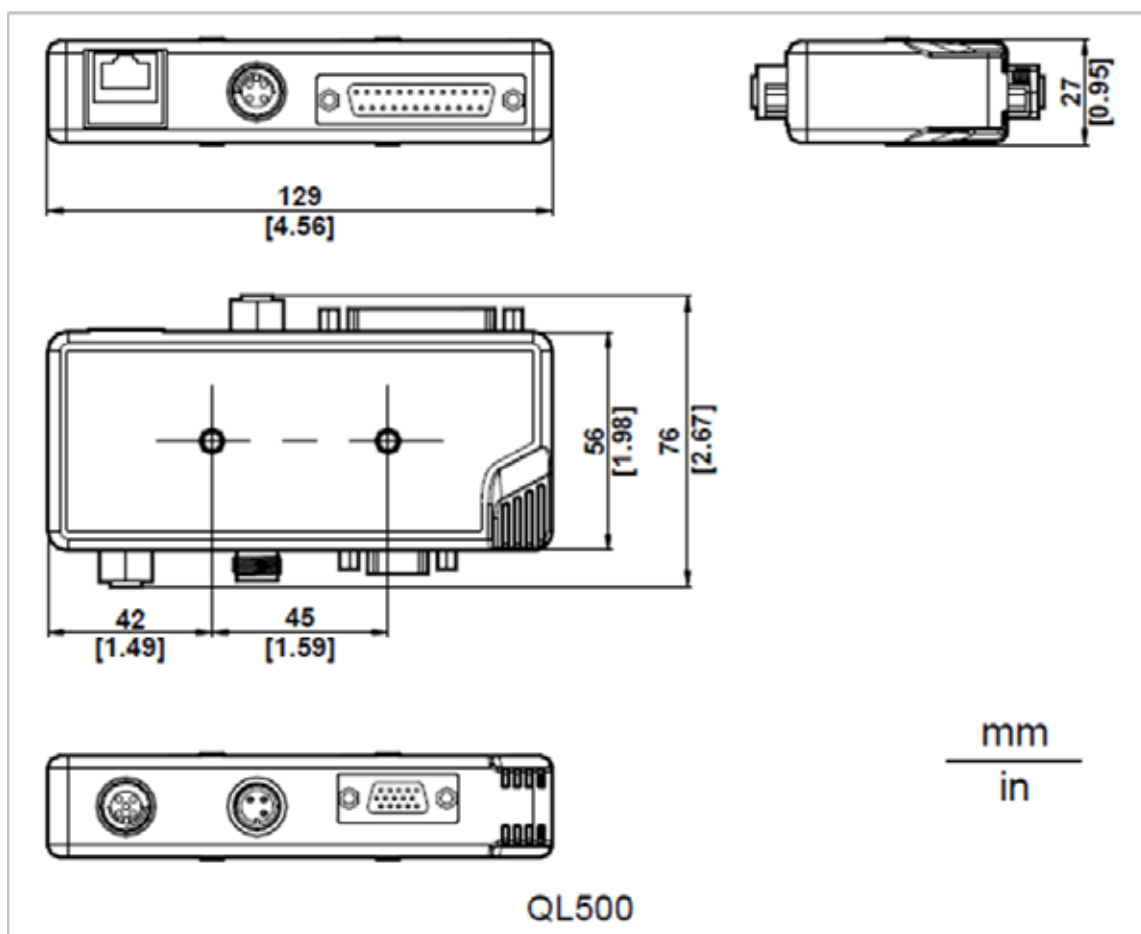


QL200

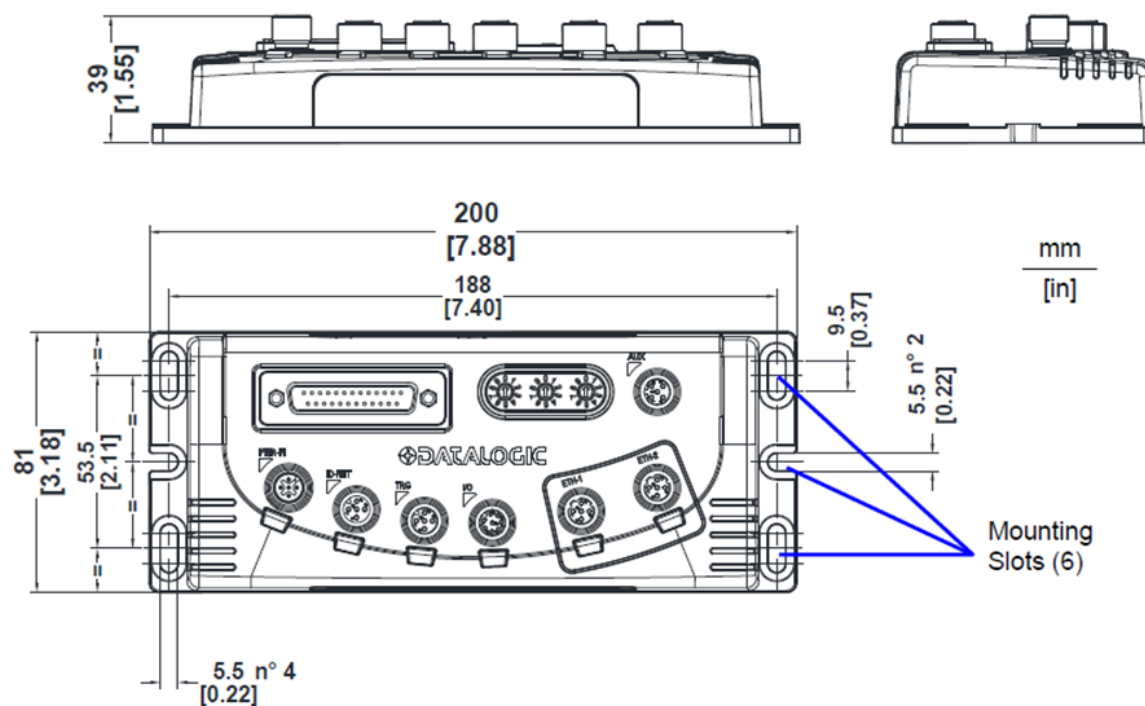


QL300

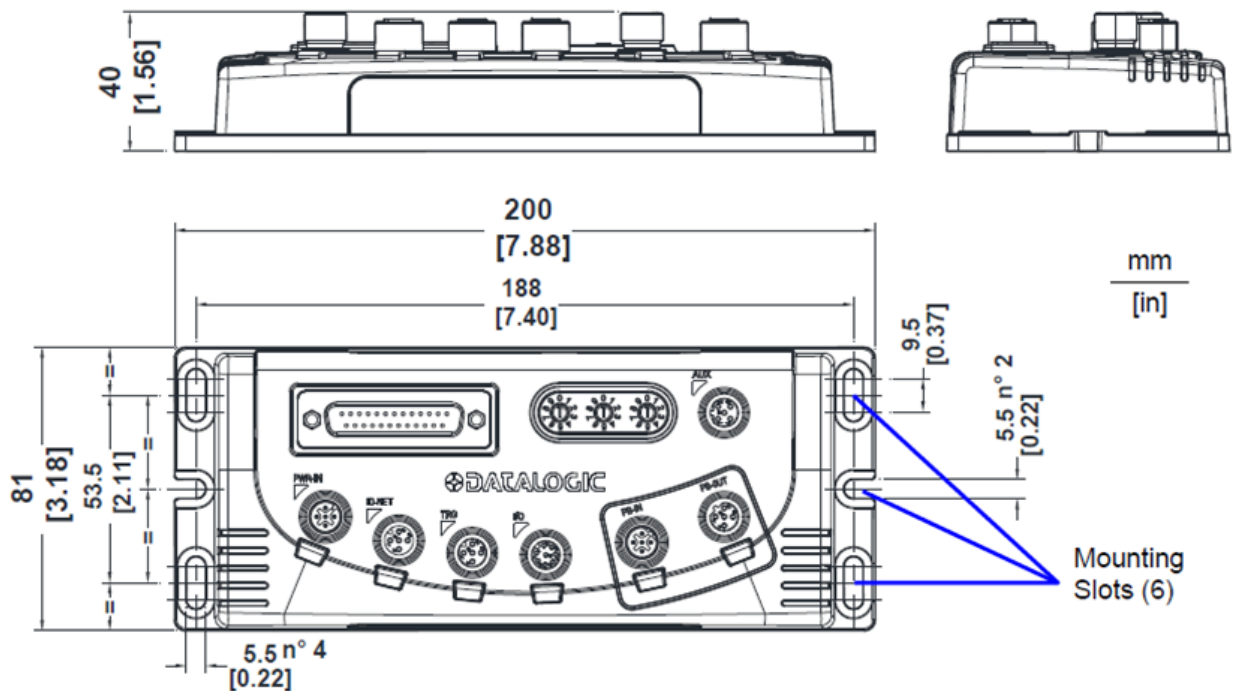
mm  
in



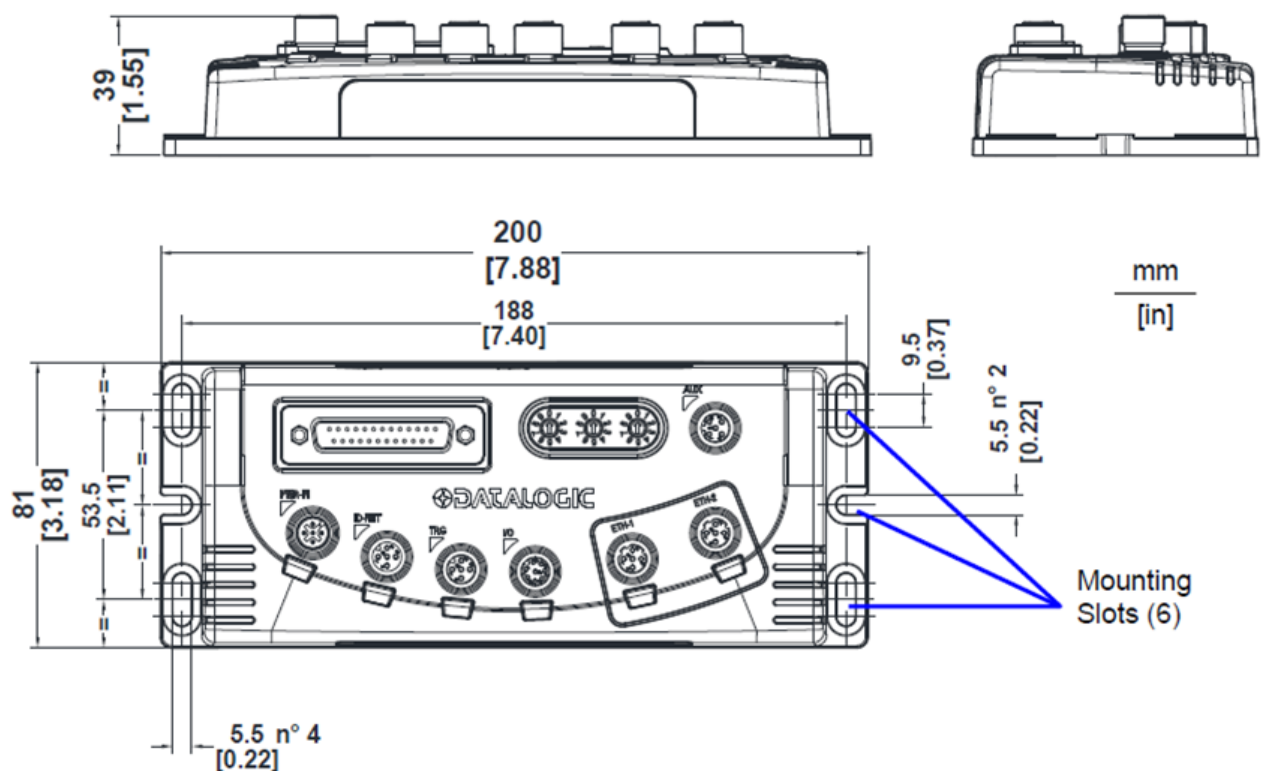
The diagram below gives the overall dimensions of the QLM500 and shows the mounting through-holes.



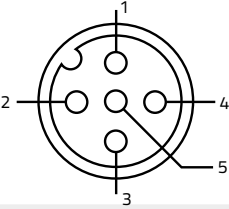
The diagram below gives the overall dimensions of the QLM600 and shows the mounting through-holes.



The diagram below gives the overall dimensions of the QLM700 and shows the mounting through-holes.



## ELECTRICAL CONNECTIONS

| 24V...4A MAX                                                                      |  | Power Input         |                            |
|-----------------------------------------------------------------------------------|--|---------------------|----------------------------|
|                                                                                   |  | Connector (Shown)   | Mating Connector           |
|                                                                                   |  | 5-PIN M12-TYPE MALE | 5-PIN M12-TYPE FEMALE      |
| MALE 5-PIN M12-TYPE                                                               |  | PIN                 | FUNCTION                   |
|  |  | 1                   | +24 VDC                    |
|                                                                                   |  | 2                   | N/C                        |
|                                                                                   |  | 3                   | DC return                  |
|                                                                                   |  | 4                   | N/C                        |
|                                                                                   |  | 5                   | Protective Earth (Chassis) |

## STS400™ -00X AND -01X PASSENGER LIGHT TRUCK TIRES

| PN                                      | DESCRIPTION                                | LINEAR CODE RESOLUTION | READING WIDTH | DOF       | MIN READING DISTANCE | MAX READING DISTANCE |
|-----------------------------------------|--------------------------------------------|------------------------|---------------|-----------|----------------------|----------------------|
| STS400™                                 |                                            | mm (mils)              | mm (in)       | mm (in)   | mm (in)              | mm (in)              |
| 937401023                               | STS400-005 SOLUT TIRE SORT 5_HEAD ST RES   | 0,30 (12)              | 805 (31,7)    | 250 (9,8) | 890 (35,0)           | 1140 (44,9)          |
| 937401024                               | STS400-006 SOLUT TIRE SORT 6_HEAD ST RES   | 0,30 (12)              | 945 (37,2)    | 250 (9,8) | 890 (35,0)           | 1140 (44,9)          |
| 937401025                               | STS400-007 SOLUT TIRE SORT 7_HEAD ST RES   | 0,30 (12)              | 1085 (42,7)   | 250 (9,8) | 890 (35,0)           | 1140 (44,9)          |
| 937401026                               | STS400-008 SOLUT TIRE SORT 8_HEAD ST RES   | 0,30 (12)              | 1225 (48,2)   | 250 (9,8) | 890 (35,0)           | 1140 (44,9)          |
| 937401027                               | STS400-015 SOLUT TIRE SORT 5_HEAD HI RES   | 0,25 (10)              | 635 (25,0)    | 200 (7,9) | 710 (28,0)           | 910 (35,8)           |
| 937401028                               | STS400-016 SOLUT TIRE SORT 6_HEAD HI RES   | 0,25 (10)              | 745 (29,3)    | 200 (7,9) | 710 (28,0)           | 910 (35,8)           |
| 937401029                               | STS400-017 SOLUT TIRE SORT 7_HEAD HI RES   | 0,25 (10)              | 855 (33,7)    | 200 (7,9) | 710 (28,0)           | 910 (35,8)           |
| 937401030                               | STS400-018 SOLUT TIRE SORT 8_HEAD HI RES   | 0,25 (10)              | 965 (38,0)    | 200 (7,9) | 710 (28,0)           | 910 (35,8)           |
| MATRIX 410™ ASSEMBLY FOR TIRE SOLUTIONS |                                            |                        |               |           |                      |                      |
| 937401035                               | Matrix 410 ATS-000 ASSEMBLY FOR STS400-00X | 0,30 (12)              | 245 (9,6)     | 250 (9,8) | 890 (35,0)           | 1140 (44,9)          |
| 937401036                               | Matrix 410 ATS-010 ASSEMBLY FOR STS400-01X | 0,25 (10)              | 195 (7,7)     | 200 (7,9) | 710 (28,0)           | 910 (35,8)           |

## STS400™ -10X AND -11X COMMERCIAL VEHICLE TIRES

| PN                                      | DESCRIPTION                                | LINEAR CODE RESOLUTION | READING WIDTH | DOF        | MIN READING DISTANCE | MAX READING DISTANCE | FOCUS DISTANCE |
|-----------------------------------------|--------------------------------------------|------------------------|---------------|------------|----------------------|----------------------|----------------|
| STS400™                                 |                                            | mm (mils)              | mm (in)       | mm (in)    | mm (in)              | mm (in)              | mm (in)        |
| 937401037                               | STS400-105 SOLUT TIRE 5_HEAD LONG RANGE    | 0.35 (14)              | 805 (31.7)    | 400 (15.7) | 880 (34.6)           | 1280 (50.4)          | 1065 (41.9)    |
| 937401038                               | STS400-106 SOLUT TIRE 6_HEAD LONG RANGE    | 0.35 (14)              | 945 (37.2)    | 400 (15.7) | 880 (34.6)           | 1280 (50.4)          | 1065 (41.9)    |
| 937401039                               | STS400-107 SOLUT TIRE 7_HEAD LONG RANGE    | 0.35 (14)              | 1085 (42.7)   | 400 (15.7) | 880 (34.6)           | 1280 (50.4)          | 1065 (41.9)    |
| 937401040                               | STS400-108 SOLUT TIRE 8_HEAD LONG RANGE    | 0.35 (14)              | 1225 (48.2)   | 400 (15.7) | 880 (34.6)           | 1280 (50.4)          | 1065 (41.9)    |
| 937401085                               | STS400-115 SOLUT TIRE 8_HEAD LONG RANGE    | 0,25 (10)              | 625 (24,6)    | 380 (15)   | 930 (36,6)           | 1310 (51,6)          | 1080 (42,5)    |
| 937401086                               | STS400-116 SOLUT TIRE 8_HEAD LONG RANGE    | 0,25 (10)              | 735 (28,9)    | 380 (15)   | 930 (36,6)           | 1310 (51,6)          | 1080 (42,5)    |
| 937401087                               | STS400-117 SOLUT TIRE 8_HEAD LONG RANGE    | 0,25 (10)              | 845 (33,3)    | 380 (15)   | 930 (36,6)           | 1310 (51,6)          | 1080 (42,5)    |
| 937401088                               | STS400-118 SOLUT TIRE 8_HEAD LONG RANGE    | 0,25 (10)              | 955 (37,6)    | 380 (15)   | 930 (36,6)           | 1310 (51,6)          | 1080 (42,5)    |
| MATRIX 410™ ASSEMBLY FOR TIRE SOLUTIONS |                                            |                        |               |            |                      |                      |                |
| 937401041                               | MATRIX 410 ATS-100 ASSEMBLY FOR STS400-10X | 0.35 (14)              | 245 (9.6)     | 400 (15.7) | 880 (34.6)           | 1280 (50.4)          | 1065 (41.9)    |
| 937401089                               | MATRIX 410 ATS-100 ASSEMBLY FOR STS400-11X | 0,25 (10)              | 185 (7,28)    | 380 (15)   | 930 (36,6)           | 1310 (51,6)          | 1080 (42,5)    |

## STS400™ - BOTTOM AND HOOK CHAIN SOLUTION

| PN                                      | DESCRIPTION                              | LINEAR CODE RESOLUTION | READING WIDTH | DOF       | MIN READING DISTANCE | MAX READING DISTANCE | FOCUS DISTANCE |
|-----------------------------------------|------------------------------------------|------------------------|---------------|-----------|----------------------|----------------------|----------------|
| STS400™                                 |                                          | mm (mils)              | mm (in)       | mm (in)   | mm (in)              | mm (in)              | mm (in)        |
| 937400018                               | STS400-205 SOL TIRE BOTTOM 5_HD ST RES   | 0,30 (11,8)            | 754 (29,7)    | 140 (5,5) | 317 (12,5)           | 457 (18,0)           | 380 (15,0)     |
| 937400019                               | STS400-206 SOL TIRE BOTTOM 6_HD ST RES   | 0,30 (11,8)            | 894 (35,2)    | 140 (5,5) | 317 (12,5)           | 457 (18,0)           | 380 (15,0)     |
| 937400020                               | STS400-305 SOL TIRE HOOK CH. 5_HD ST RES | 0,30 (11,8)            | 748 (29,4)    | 155 (6,1) | 405 (15,9)           | 560 (22,0)           | 483 (19,0)     |
| 937400021                               | STS400-306 SOL TIRE HOOK CH. 6_HD ST RES | 0,30 (11,8)            | 888 (35,0)    | 155 (6,1) | 405 (15,9)           | 560 (22,0)           | 483 (19,0)     |
| MATRIX 410™ ASSEMBLY FOR TIRE SOLUTIONS |                                          |                        |               |           |                      |                      |                |
| 937400022                               | MATRIX 410 ATS-200 ASSY FOR STS400-20X   | 0,30 (11,8)            | 194 (7,6)     | 140 (5,5) | 317 (12,5)           | 457 (18,0)           | 380 (15,0)     |
| 937400023                               | MATRIX 410 ATS-300 ASSY FOR STS400-30X   | 0,30 (11,8)            | 188 (7,4)     | 155 (6,1) | 405 (15,9)           | 560 (22,0)           | 483 (19,0)     |