

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 (12)	1065 (41.9)	890 (35)	1140 (44.9)	184 (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						635 (25)
937401028	STS400-016	6	0.25 (10)	788 (31)	710 (28)	910 (35.8)	146 (5.7)	745 (29.3)
937401029	STS400-017	7						855 (33.7)
937401030	STS400-018	8						955 (38)

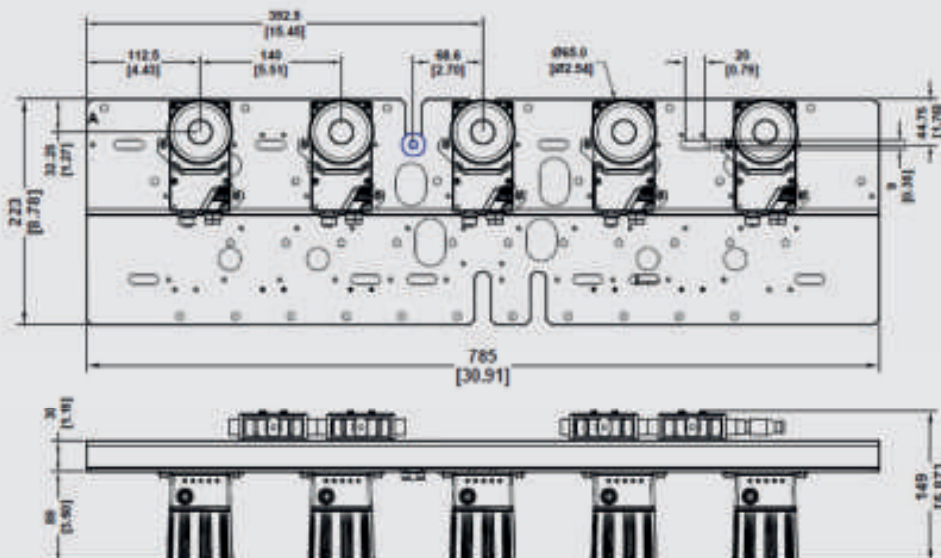
PN	DESCRIPTION	READERS	CODE RESOLUTION	FOCUS DISTANCE	MIN READING DISTANCE	MAX READING DISTANCE	VERTICAL FOV @MIN DISTANCE	HORIZONTAL FOV @MIN DISTANCE
		qty	mm (mils)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)
937401037	STS400-105	5	0.35 (14)	1065 (41.9)	890 (34.6)	1280 (50.4)	184 (7.2)	805 (31.7)
937401038	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 (10)	1080 (42.5)	930 (36.6)	1310 (51.6)	143 (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 (12)	380 (15)	317 (12.5)	457 (18)	145 (5.7)	754 (29.7)
937400019	STS400-206	6						894 (35.2)

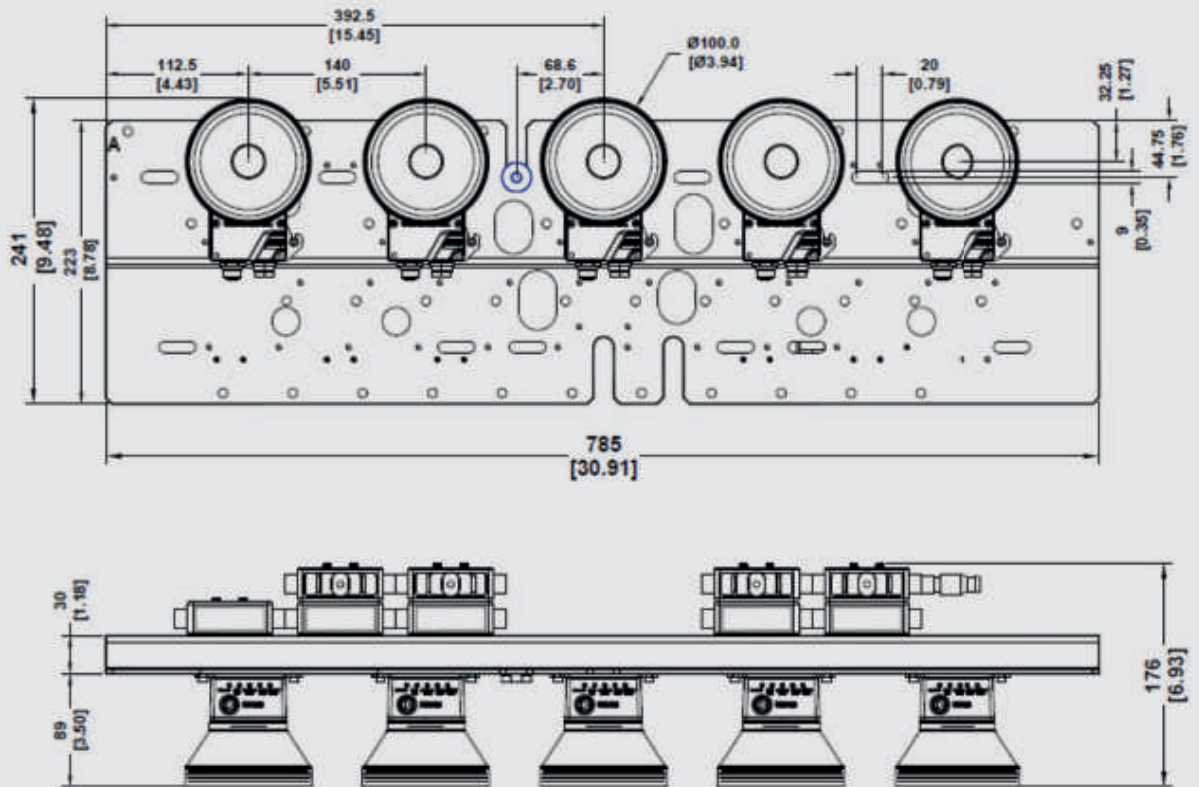
PN	DESCRIPTION	READERS	CODE RESOLUTION	FOCUS DISTANCE	MIN READING DISTANCE	MAX READING DISTANCE	VERTICAL FOV @MIN DISTANCE	HORIZONTAL FOV @MIN DISTANCE
		qty	mm (mils)	mm (in)	mm (in)	mm (in)	mm (in)	mm (in)
937400020	STS400-305	5	0.30 (12)	483 (19)	405 (15.9)	560 (22)	141 (5.6)	748 (29.4)
937400021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

## DIMENSIONS

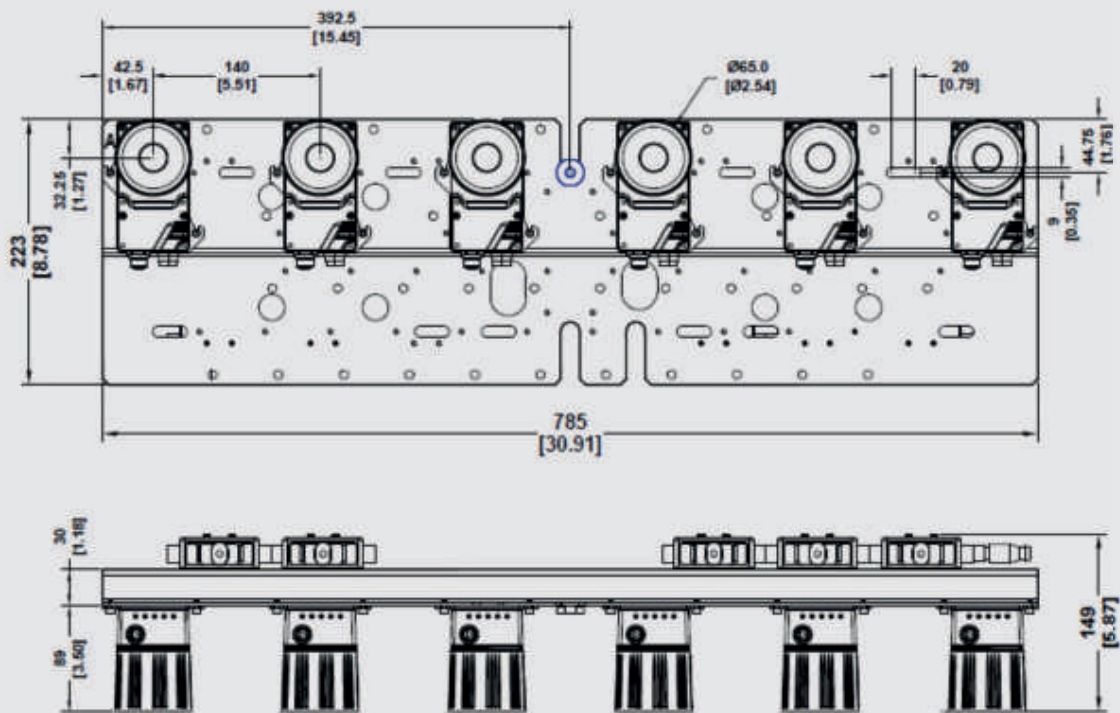
STS400-005, STS400-205, STS400-305



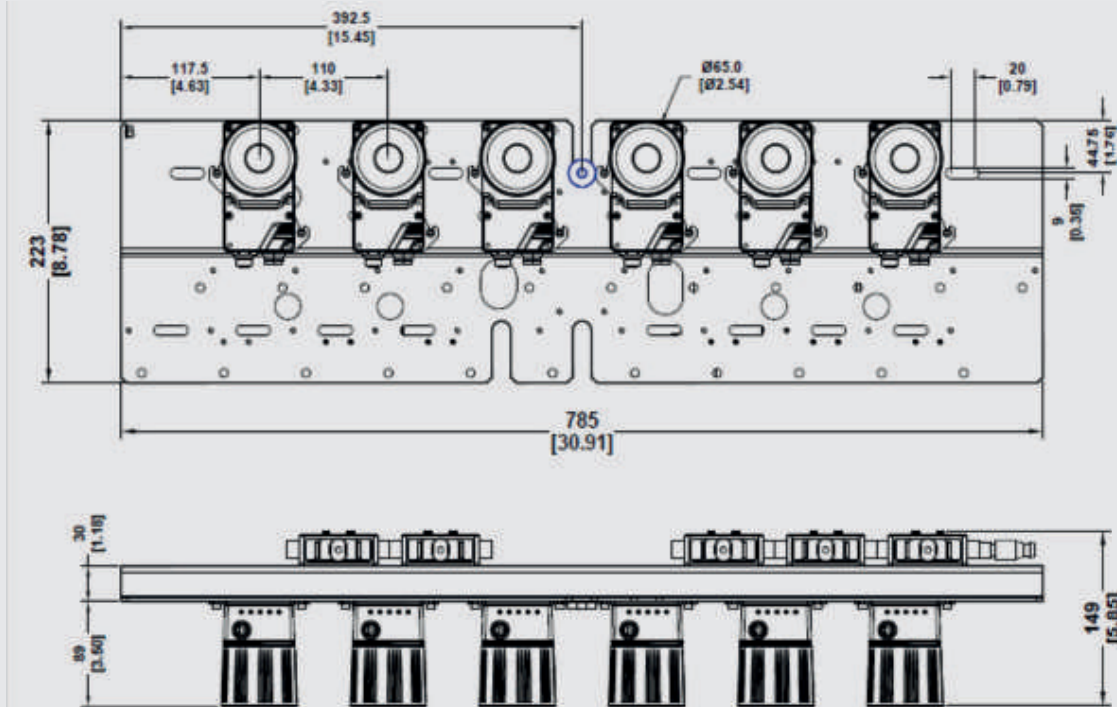
STS400-105



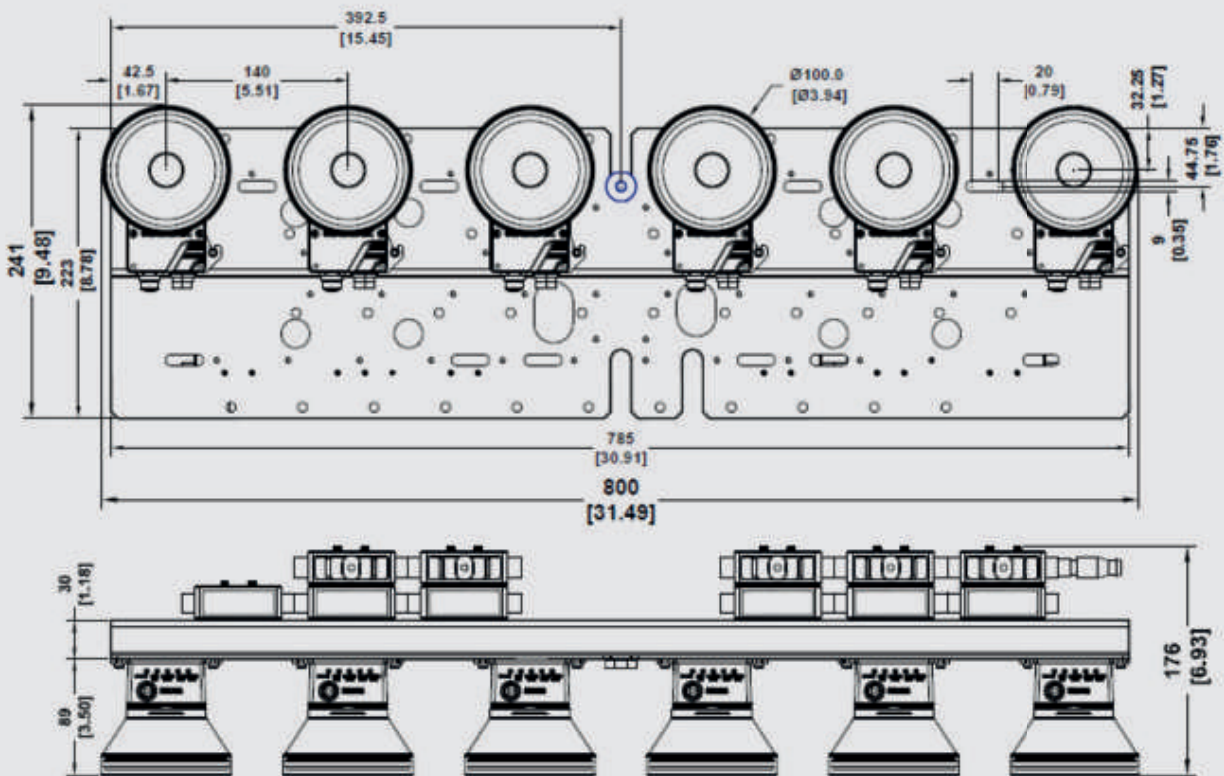
STS400-006, STS400-206, STS400-306



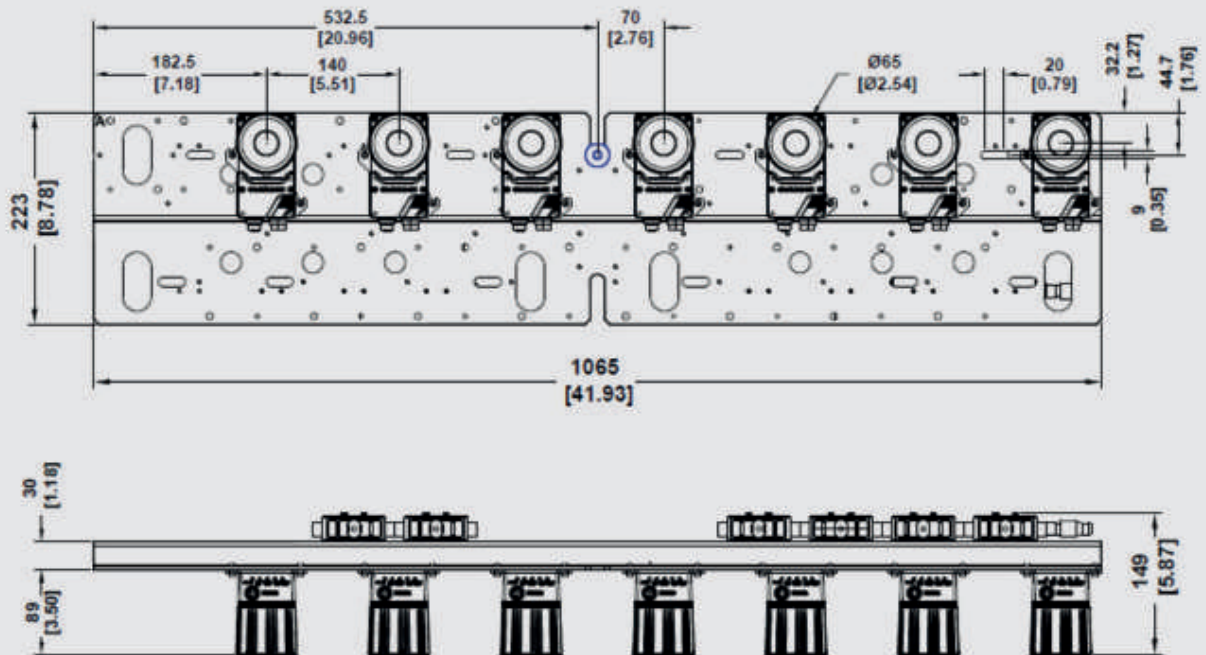
STS400-016



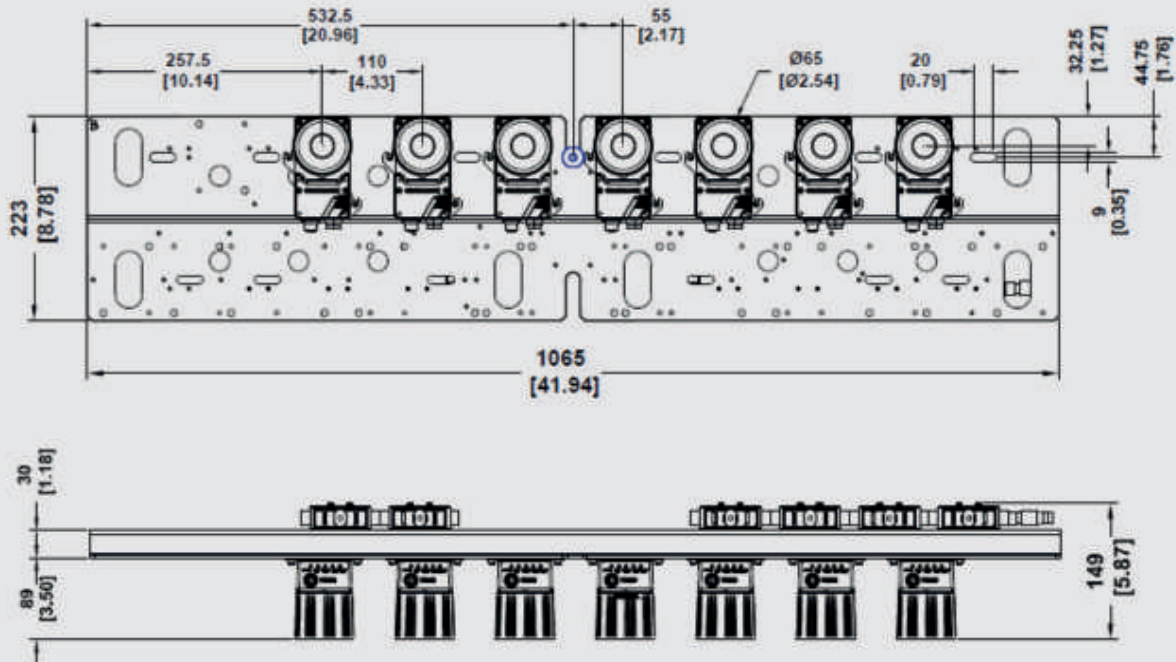
STS400-106



STS400-007



STS400-017



## TECHNICAL DATA

### Electrical features

Power	
Supply Voltage	24 Vdc
Consumption	

### Communication Interfaces

Main -RS232 -RS485 full-duplex	2400 to 115200 bit/s 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	$\pm 35^\circ$
Tilt	$0^\circ$ - $360^\circ$
Lighting system	Internal Illuminator
Led Emission	according to EN 62471

### Environmental features

Operating Temperature	$0^\circ$ to $50^\circ$ °C (32 to 122 °F)
Storage Temperature	$-20^\circ$ to $70^\circ$ °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) 7-8 readers 5450 g (12.02 lbs)
Reader + Bracket	Matrix 410 ATS-000 about 610 g (1.34 lbs) each Matrix 410 ATS-100 about 880 g (1.94 lbs) each
Pre-mounted Cables	CAB-MS003 100 g (3.53 oz) each CAB-L003 66 g (2.33 oz) each
ID-NET Cables and Terminator	CBL-1480-003 48 g (1.69 oz) each CBL-1490 Terminator 16 g (0.56 oz)
QLs	QLs QL100 115 g (4.06 oz) each 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.

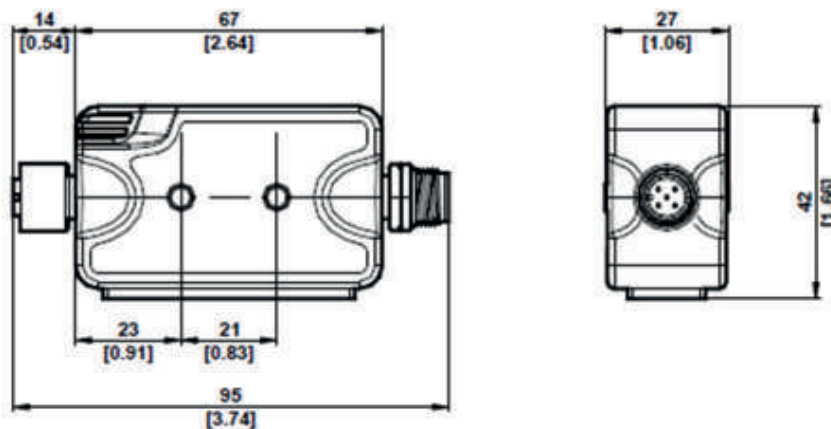
## SOFTWARE FEATURES

### 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 Serial Host Mode Programming sequences	
Parameter Storage	Permanent memory (Flash)	

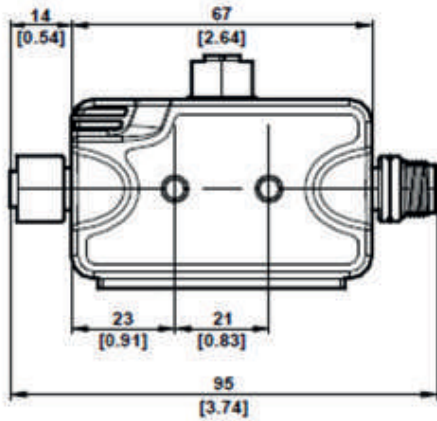
### USER INTERFACE

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

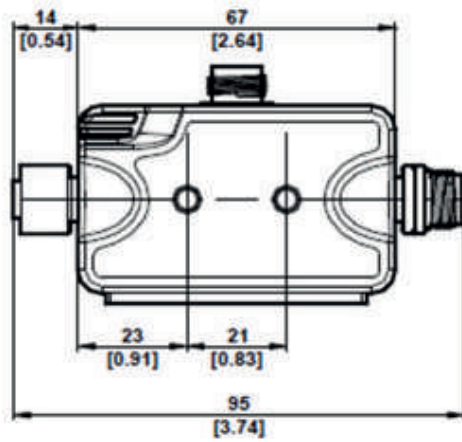


QL100

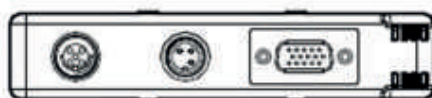
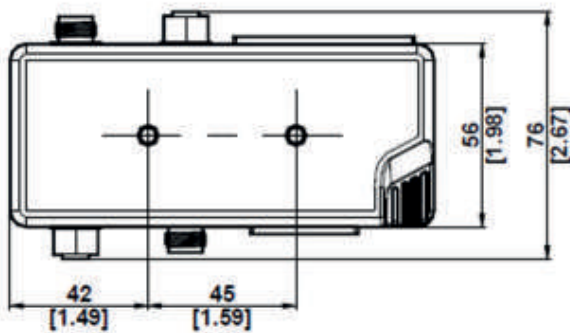
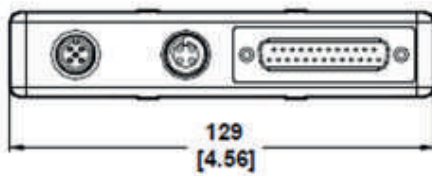




QL150

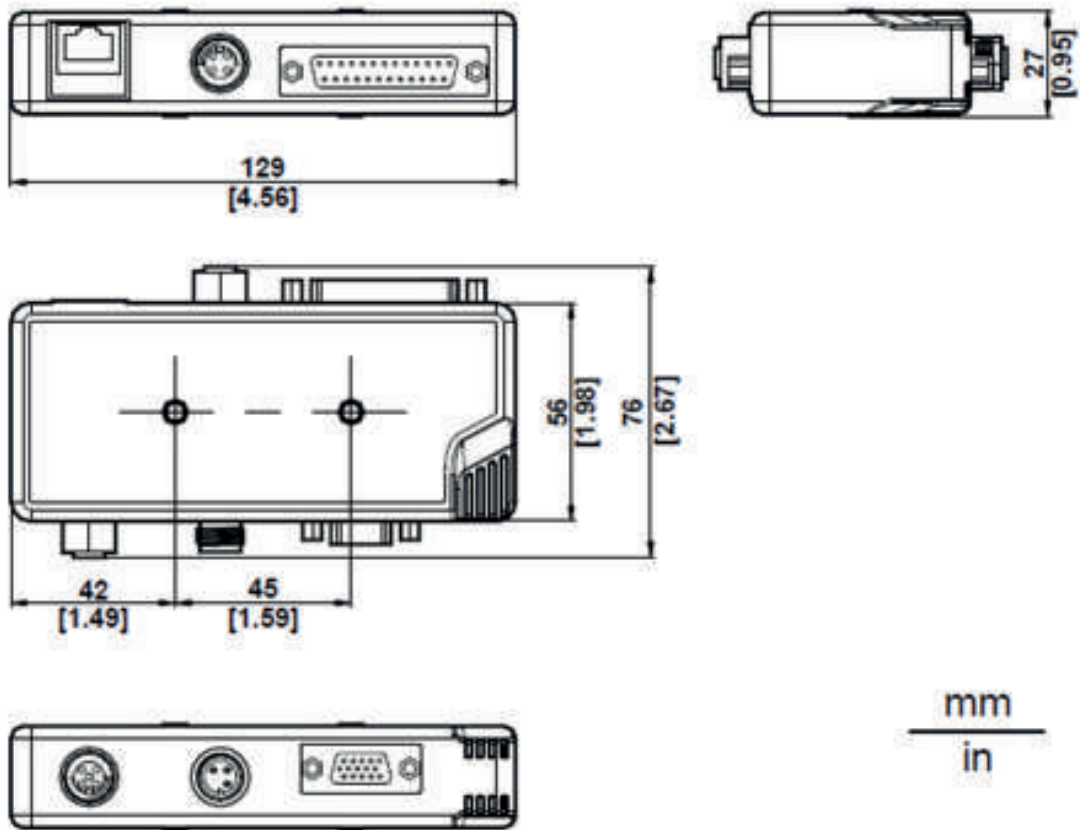


QL200



QL300

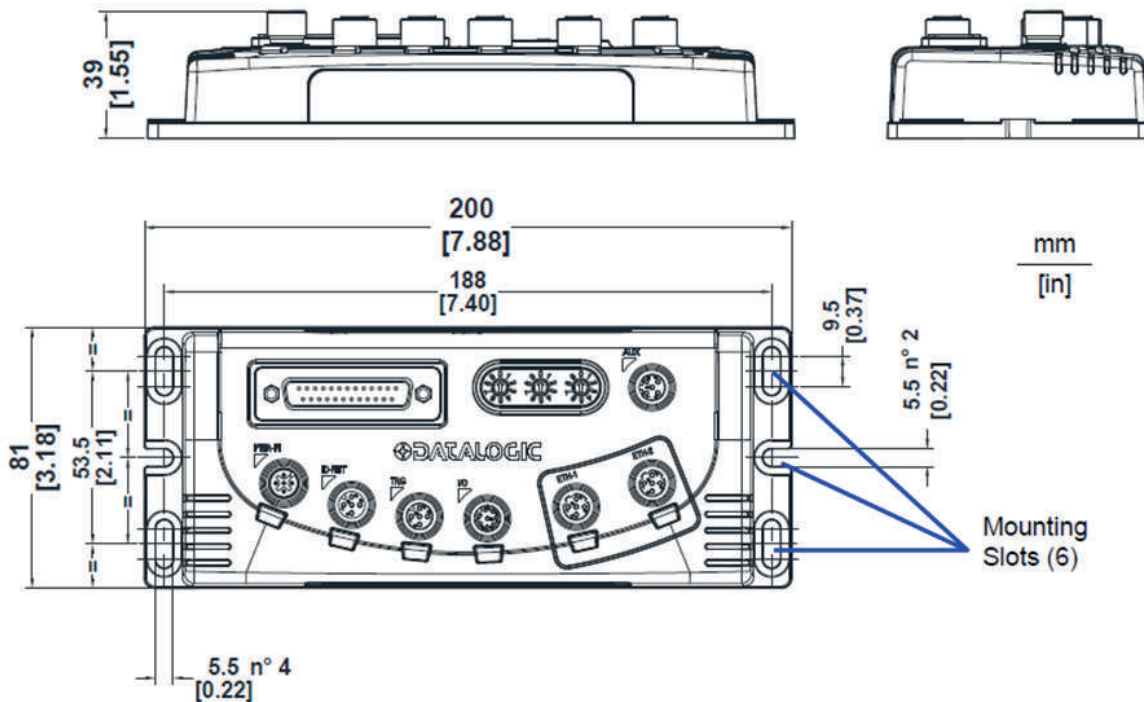
mm  
in



mm  
in

QL500

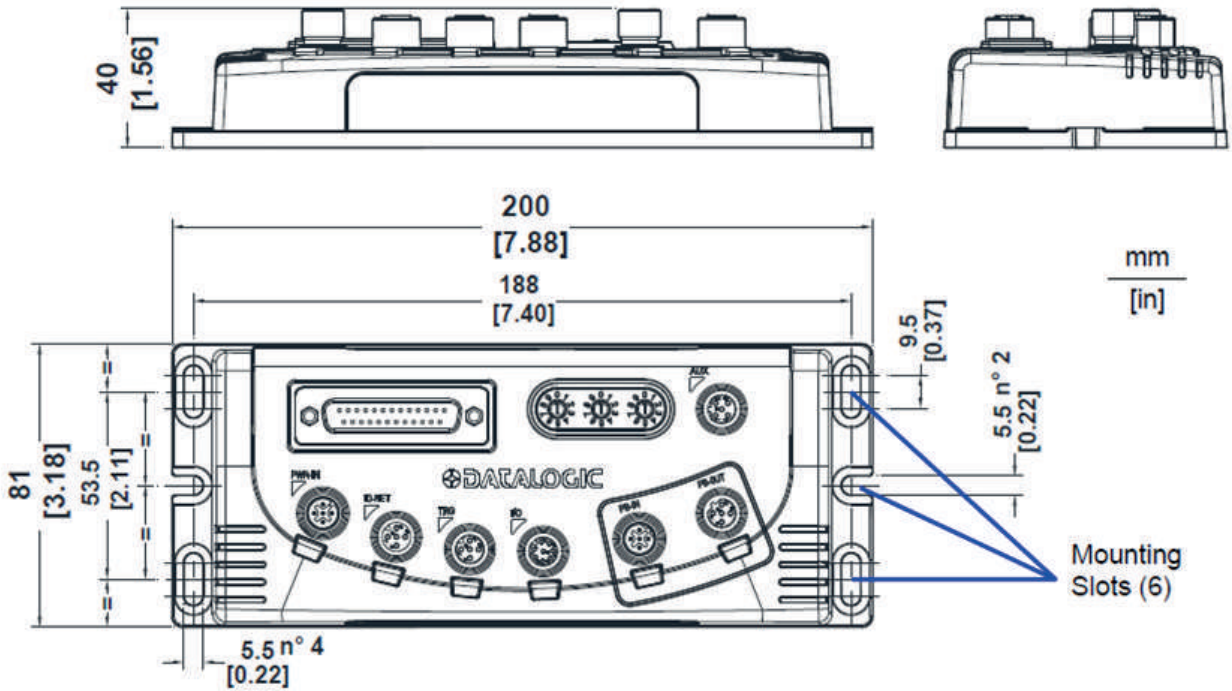
The diagram below gives the overall dimensions of the QLM500 and shows the mounting through-holes.



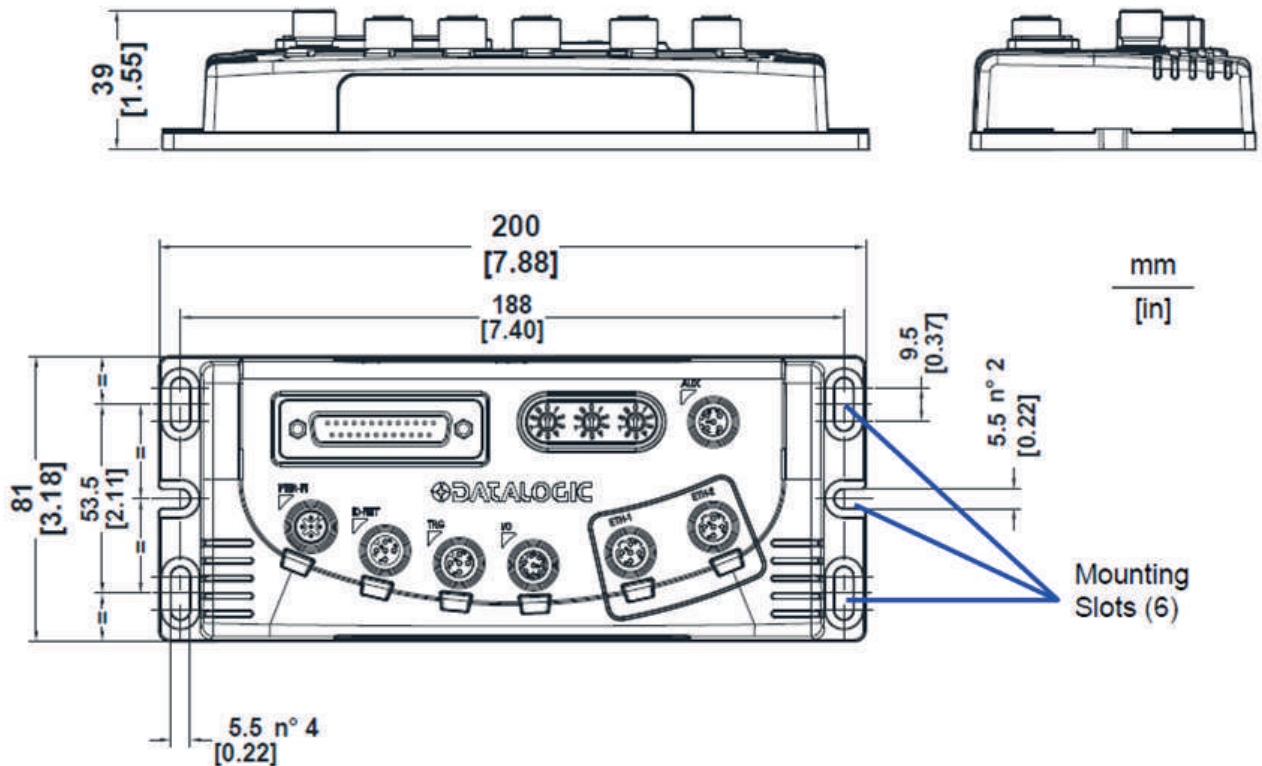
mm  
[in]

Mounting Slots (6)

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
		FUNCTION	
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
<b>STS400™</b>		<b>mm (mils)</b>	<b>mm (in)</b>	<b>mm (in)</b>	<b>mm (in)</b>	<b>mm (in)</b>
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)
<b>MATRIX 410™ ASSEMBLY FOR TIRE SOLUTIONS</b>						
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
<b>STS400™</b>		<b>mm (mils)</b>	<b>mm (in)</b>	<b>mm (in)</b>	<b>mm (in)</b>	<b>mm (in)</b>	<b>mm (in)</b>
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)
<b>MATRIX 410™ ASSEMBLY FOR TIRE SOLUTIONS</b>							
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
<b>STS400™</b>		<b>mm (mils)</b>	<b>mm (in)</b>	<b>mm (in)</b>	<b>mm (in)</b>	<b>mm (in)</b>	<b>mm (in)</b>
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)
<b>MATRIX 410™ ASSEMBLY FOR TIRE SOLUTIONS</b>							
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)