



■ Description

Omron STI's VS6400 Profiling Scanner is a family of high-speed measuring light curtains specifically designed for vehicle detection in automated intelligent transportation systems. The scanner can also be used as an input sensor for classification systems. The VS6400 is a 2-box system requiring no separate controller for its operation.

The VS6400 comes in scanning lengths from 350 mm through 1741 mm (13.8 through 68.5 in.) and can detect objects as small as 30 mm. The scanner provides two solid-state outputs (factory configured PNP or NPN), one for detection and one to signal an alarm condition. RS-485 serial communication is included for more advanced detection and reporting algorithms.

Vehicle Detection

The factory default settings for the VS6400 provide for vehicle detection. A special software algorithm enables the scanner to provide reliable detection while still ignoring small objects that might otherwise provide false detection. The factory default values for this function work for most applications, but the user can modify these settings for special applications if necessary.

Profiling Scanner VS6400

High-Speed Measuring Light Curtain for Intelligent Transportation Systems

- High-speed measuring light curtain for scanning moving vehicles
- Specifically designed and factory configured for vehicle detection
- High degree of immunity to ambient light
- Solid-state PNP or NPN outputs for detection and alarm
- RS-485 serial communications
- Default mode suitable for most detection applications
- Special software function ignores small objects such as snowflakes while still reliably detecting narrow trailer hitches
- Individual beam indicators help make alignment easy
- Choice of two beam spacings: 22 mm and 43 mm

■ Description (continued)

Vehicle Classification

While the VS6400 does not directly perform classification, it can provide profiling data that can be used by classification systems (not provided by Omron STI) to determine vehicle classification. Most integrators design and develop their own classification systems. Upon request, Omron STI can provide the names of such integrators, if needed.

Custom Scanners

Often the ideal solution to an intelligent transportation system requires customizing the Omron STI scanner. We have done this with great success for appropriate quantities. Please contact Omron STI if you are interested in a quotation for a custom scanner.

Environmental Towers

Most applications for vehicle scanners require an environmental enclosure. We refer to these as “towers”. Omron STI has a wide range of high quality towers in stainless steel and aluminum. Refer to our EE6000 series for details. Some customers choose to fabricate their own towers. To assist, Omron STI can provide specific dimensional drawings of the scanners and some of the hard-to-find components, such as glass with a defogger/defroster heater incorporated.

■ Special Features



For information on Environmental Enclosures EE6000 Scanner Towers, look under Vehicle Scanners at www.stiscanners.com

■ Specifications

Operating Power: 24 VDC \pm 20%, 14 W max. exclusive of output load current					
Detection Response Time: 40 ms max in normal scan, 80 ms max in double scan; see table for specific scan times for the different lengths					
Serial Communications: RS-485 at 19.2 kbaud					
Solid-State Outputs: NPN (current sinking) or PNP (current sourcing), 150 mA at 30 VDC max.					
Output 1: Detection (with programmable hysteresis)					
Output 2: Alarm					
Alarm Conditions: Weak signal (resets automatically when signal is restored), system fault					
Cables & Connections: M12 DIN connectors, maximum cable length is 50 m (164 ft.)					
Minimum Detectable Object (Static): 22 mm (0.85 in.) beam spacing: 30 mm (1.18 in.) in Normal Scan, 24 mm (0.94 in.) in the central 1/3 of the range for Double Scan; 43 mm (1.7 in.) beam spacing: 53 mm (2.09 in.) in Normal Scan, 40 mm (1.57 in.) in the central 1/3 of the range for Double Scan.					
Operating Range: 20 m (66 ft.) with a gain margin of 2					
Beam Spacing: 22 mm (0.85 in.) or 43 mm (1.7 in.)					
Scan Lengths & Scan Times:				Response Time (Relay Hysteresis)	
Scan Length	No. of Beams	Scan Time		Normal Scan	Double Scan
		Normal Scan	Double Scan		
<i>22 mm (0.85 in.) Beam Spacing</i>					
350 mm (13.8 in.)	16	1.0 ms	2.0 ms	3.0 ms	6.0 ms
524 mm (20.6 in.)	24	1.4 ms	2.8 ms	4.2 ms	8.4 ms
698 mm (27.5 in.)	32	1.9 ms	3.8 ms	5.7 ms	11.4 ms
872 mm (34.3 in.)	40	2.4 ms	4.8 ms	7.2 ms	14.4 ms
1046 mm (41.2 in.)	48	2.9 ms	5.8 ms	8.7 ms	17.4 ms
1220 mm (48.0 in.)	56	3.4 ms	6.8 ms	10.2 ms	20.4 ms
1393 mm (54.8 in.)	64	3.8 ms	7.6 ms	11.4 ms	22.8 ms
1570 mm (61.8 in.)	72	4.3 ms	8.6 ms	12.9 ms	25.8 ms
1741 mm (68.5 in.)	80	4.8 ms	9.6 ms	14.4 ms	28.8 ms
1915 mm (75.4 in.)	88	5.3 ms	10.6 ms	15.9 ms	31.8 ms
2090 mm (82.3 in.)	96	5.8 ms	11.6 ms	17.4 ms	34.8 ms
<i>43 mm (1.7 in.) Beam Spacing</i>					
350 mm (13.8 in.)	8	0.6 ms	1.2 ms	1.8 ms	2.4 ms
698 mm (27.5 in.)	16	1.0 ms	2.0 ms	3.0 ms	6.0 ms
1046 mm (41.2 in.)	24	1.4 ms	2.8 ms	4.2 ms	8.4 ms
1393 mm (54.8 in.)	32	1.9 ms	3.8 ms	5.7 ms	11.4 ms
1741 mm (68.5 in.)	40	2.4 ms	4.8 ms	7.2 ms	14.4 ms
2090 mm (82.3 in.)	48	2.9 ms	5.8 ms	8.7 ms	17.4 ms
Transmitter Indicators: Red, solid “on” indicates power, normal operation; “flashing” indicates transmitter fault					
Receiver Indicators					
Green: Beams aligned, no blocked beams					
Yellow: Alarm condition					
Red: Beams blocked or misaligned					
Individual Beam Indicators: Illuminate to indicate which beams are blocked					
Construction: Painted aluminum housing, plastic window.					
Environmental Ratings					
Ambient Light Immunity: Up to 40,000 lux outside of \pm 5° angle of incidence upon the receiver					
Operating Temperature Range: -40 to +70°C (-40 to 158°F)					
Sealing: IP65					
Vibration: Per IEC 60068-2-6 (0 to 55 Hz at 1 octave/minute, 0.35 mm amplitude, 3 axes)					
Bump/Shock: Per IEC 60068-2-29 (10 g, 16 ms pulses)					

Specifications are subject to change without notice.



vehicle scanners



Profiling Scanner VS6400

The VS6400 incorporates many special features that can be used for greater functionality. Many of these are simple setup instructions that are sent to the scanner via its serial port. Some of these include:

DoubleScan

This improves object detection in the central part of the detection zone by interpolating between beams.

Serial Output Reports

This provides size and detection information in greater detail than the simple on/off solid-state output. Reports are available on a specific, repetitive basis or on demand via the serial port.

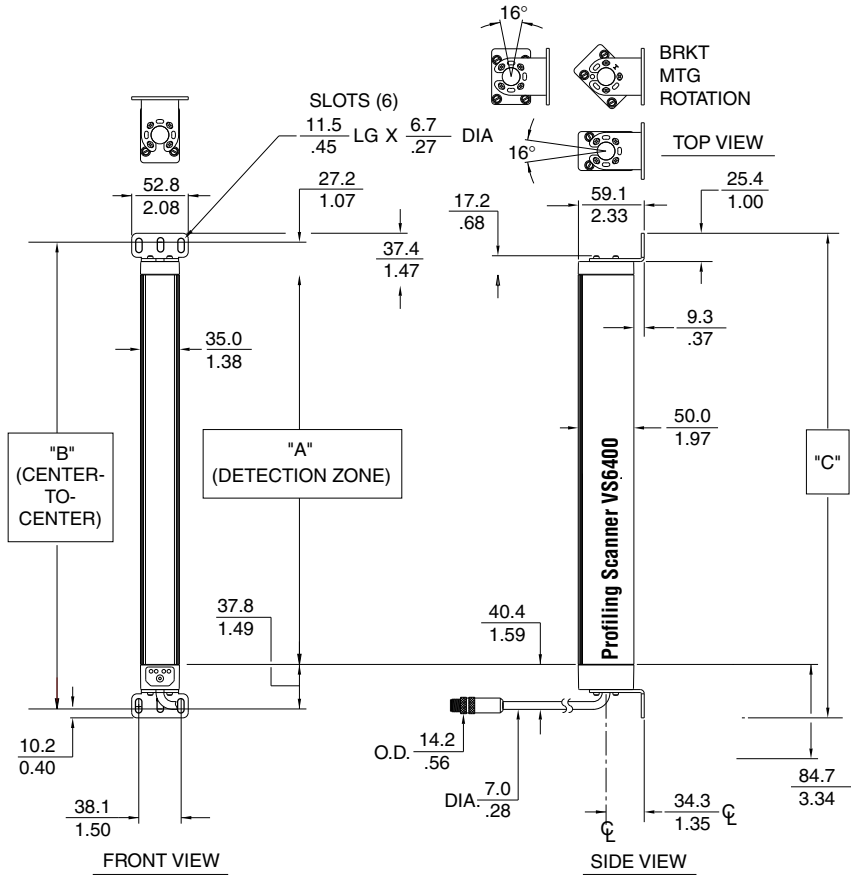
Masking and Screening Functions

These functions allow you to ignore specific beams in the scanner or to set minimum detection values.

Special Serial Data Functions

These include Quiet Mode and Delta Mode which reduce the number of serial reports issued to speed up processing in the customer's system. Also available is a Heartbeat Mode which provides synchronous reports at longer than normal intervals to make sure the scanner is still on-line even if the quiet and delta modes have suppressed reports.

■ Dimensions — mm/in.



DIMENSIONS: $\frac{\text{mm (+/-).3}}{\text{INCHES (+/-).01}}$

Profiling Scanner VS6400 Dimensions

	350 mm	524 mm	698 mm	872 mm	1046 mm	1220 mm
A mm/in.	350/13.8	524/20.6	698/27.5	872/34.3	1046/41.2	1220/48.0
B mm/in.	419/16.5	589/23.3	763/30.0	938/36.9	1111/43.7	1285/50.6
C mm/in.	435/17.1	609/24.0	783/30.8	957/37.7	1131/44.5	1305/51.4
System Shipping Weight						
kg/lb.	4.6/10	5.6/12	6.4/14	6.8/15	8.2/18	9.1/20

	1393 mm	1570 mm	1741 mm	1915 mm	2090 mm
A mm/in.	1393/54.9	1570/61.8	1741/68.6	1915/75.4	2090/82.3
B mm/in.	1459/57.4	1635/64.4	1807/71.1	1981/78.0	2155/84.8
C mm/in.	1479/58.2	1655/65.2	1827/71.9	2001/78.8	2175/85.6
System Shipping Weight					
kg/lb.	9.5/21	10.0/22	11.4/23	10.9/24	11.8/28

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OMRON SCIENTIFIC TECHNOLOGIES, INC.
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For the Latest Information
On the Internet: www.stiscanners.com or www.omron.ca



Ordering

For a complete system order:

- One system or one transmitter and one receiver of the same scan length
- Two cables
- One documentation kit (optional); manuals and the setup software are available at no charge on our website at www.stiscanners.com.

Cables

Cables for the transmitter and receiver are identical. Cables are not included, order separately. Order two cables for each system.

Length	Model No.
3 m (9.8 ft.)	VS64-CBL-03M
10 m (32.8 ft.)	VS64-CBL-10M
30 m (98.4 ft.)	VS64-CBL-30M
50 m (164.0 ft.)	VS64-CBL-50M

Documentation Kit

Documentation kits are not included, order separately.

Description	Model No.
Documentation kit, includes installation manual and setup software	VS6400-DOC-F001

Power Supplies (Optional)

You may purchase power supplies from Omron STI or use your own. Omron STI's power supplies accept 115 VAC or 230 VAC input and provide regulated 24 VDC output to operate the vehicle scanners.

Description	Part No.
24 VDC power supply 50 W, 2.1 A	42992
24 VDC power supply, 100 W, 4.2 A	40128

NPN System/Transmitter/Receiver

Scan Length	System (Transmitter + Receiver)*	Transmitter	Receiver*
For Units with 22 mm Beam Spacing			
350 mm (13.8 in.)	VS640350-22-N-F001	VS640350-22-X	VS640350-22-N-F001-R
524 mm (20.6 in.)	VS640524-22-N-F001	VS640524-22-X	VS640524-22-N-F001-R
698 mm (27.5 in.)	VS640698-22-N-F001	VS640698-22-X	VS640698-22-N-F001-R
872 mm (34.3 in.)	VS640872-22-N-F001	VS640872-22-X	VS640872-22-N-F001-R
1046 mm (41.2 in.)	VS641046-22-N-F001	VS641046-22-X	VS641046-22-N-F001-R
1220 mm (48.0 in.)	VS641220-22-N-F001	VS641220-22-X	VS641220-22-N-F001-R
1393 mm (54.9 in.)	VS641393-22-N-F001	VS641393-22-X	VS641393-22-N-F001-R
1570 mm (61.8 in.)	VS641570-22-N-F001	VS641570-22-X	VS641570-22-N-F001-R
1741 mm (68.6 in.)	VS641741-22-N-F001	VS641741-22-X	VS641741-22-N-F001-R
1915 mm (75.4 in.)	VS641915-22-N-F001	VS641915-22-X	VS641915-22-N-F001-R
2090 mm (82.3 in.)	VS642090-22-N-F001	VS642090-22-X	VS642090-22-N-F001-R
For Units with 43 mm Beam Spacing			
350 mm (13.8 in.)	VS640350-43-N-F001	VS640350-43-X	VS640350-43-N-F001-R
698 mm (27.5 in.)	VS640698-43-N-F001	VS640698-43-X	VS640698-43-N-F001-R
1046 mm (41.2 in.)	VS641046-43-N-F001	VS641046-43-X	VS641046-43-N-F001-R
1393 mm (54.9 in.)	VS641393-43-N-F001	VS641393-43-X	VS641393-43-N-F001-R
1741 mm (68.6 in.)	VS641741-43-N-F001	VS641741-43-X	VS641741-43-N-F001-R
2090 mm (82.3 in.)	VS642090-43-N-F001	VS642090-43-X	VS642090-43-N-F001-R

PNP System/Transmitter/Receiver

Scan Length	System (Transmitter + Receiver)*	Transmitter	Receiver*
For Units with 22 mm Beam Spacing			
350 mm (13.8 in.)	VS640350-22-P-F001	VS640350-22-X	VS640350-22-P-F001-R
524 mm (20.6 in.)	VS640524-22-P-F001	VS640524-22-X	VS640524-22-P-F001-R
698 mm (27.5 in.)	VS640698-22-P-F001	VS640698-22-X	VS640698-22-P-F001-R
872 mm (34.3 in.)	VS640872-22-P-F001	VS640872-22-X	VS640872-22-P-F001-R
1046 mm (41.2 in.)	VS641046-22-P-F001	VS641046-22-X	VS641046-22-P-F001-R
1220 mm (48.0 in.)	VS641220-22-P-F001	VS641220-22-X	VS641220-22-P-F001-R
1393 mm (54.9 in.)	VS641393-22-P-F001	VS641393-22-X	VS641393-22-P-F001-R
1570 mm (61.8 in.)	VS641570-22-P-F001	VS641570-22-X	VS641570-22-P-F001-R
1741 mm (68.6 in.)	VS641741-22-P-F001	VS641741-22-X	VS641741-22-P-F001-R
1915 mm (75.4 in.)	VS641915-22-P-F001	VS641915-22-X	VS641915-22-P-F001-R
2090 mm (82.3 in.)	VS642090-22-P-F001	VS642090-22-X	VS642090-22-P-F001-R
For Units with 43 mm Beam Spacing			
350 mm (13.8 in.)	VS640350-43-P-F001	VS640350-43-X	VS640350-43-P-F001-R
698 mm (27.5 in.)	VS640698-43-P-F001	VS640698-43-X	VS640698-43-P-F001-R
1046 mm (41.2 in.)	VS641046-43-P-F001	VS641046-43-X	VS641046-43-P-F001-R
1393 mm (54.9 in.)	VS641393-43-P-F001	VS641393-43-X	VS641393-43-P-F001-R
1741 mm (68.6 in.)	VS641741-43-P-F001	VS641741-43-X	VS641741-43-P-F001-R
2090 mm (82.3 in.)	VS642090-43-P-F001	VS642090-43-X	VS642090-43-P-F001-R

Note: The "F001" in the model numbers of the systems, receivers and documentation kits indicate the default feature set. Units with different feature sets (for specific applications or customers) will have a different model number, for example F012. If you require a feature set other than the default version, contact Omron STI for the specific model numbers.



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