Machine Vision Systems
Hand-held Reading Systems

SIMATIC HawkEye 50T, 51T

Overview

The SIMATIC HawkEye 50T and SIMATIC HawkEye 51T are high-performance, high resolution readers for low-contrast two dimensional (2D) Data Matrix direct part marks (DPMs). They incorporate advanced video image processing and illumination technology to read symbols on a variety of surfaces that have been created by dot peen, laser, or inkjet.

The hand-held readers feature the LytePype™ illumination system that delivers superior performance for DPM reading at high reading rates. The HawkEye 50T/51T are contact or near contact readers, and the LytePype guides the operator to position the reader for a simple point-and-shoot operation.

The hand-held readers provide a comprehensive set of programmable features that can be configured to address any data collection application. Setup is simple and performed via the Graphical User Interface PC application program through the serial interface or USB port and by reading special Data Matrix codes supplied with the unit.

Benefits

- Decodes hard to read low contrast Data Matrix codes made by dot peen, laser or ink-jet
- Reading of a broad variety of direct part marks without any parameter adjustments
- LytePype illumination system enhances readability of low-contrast marks
- High-resolution imager for reading very small codes
- High-performance processor for high decoding speed and very robust reading

Application

Industrial and commercial part identification and unit level traceability applications where the part is identified by a Data Matrix (DM) code and where a hand held reader is required.

Wide range of applications in many industries, e.g.

- Automotive industry: Identification of various automotive power train components (cylinder heads, cylinder blocks, manifolds, etc.)
- Aerospace: Dot peen marks on gas turbine blades
- Medical devices: Laser marks on various medical device components and enclosures
- Electronics:
  Laser marks on ESD sensitive hard drive components

Design

They are hand held imaging readers with an ergonomic pistol grip design. The reader may be held in the right or left hand. Reading is commanded by a trigger in front of the pistol grip. The readers are constructed of a high impact durable plastic. ESD versions (Electrostatic Sensitive Devices) of the HawkEye 50T are available for applications with electrostatic discharge threats.

Power supply and LytePype options are not included as part of HawkEye 50T or 51T systems and must be ordered as individual line items

SIMATIC HawkEye 50T

The SIMATIC HawkEye 50T is designed to read DPM codes with element sizes as small as 0.004 inches (0.10 mm), and an overall symbol size of up to 0.75" x 0.75" (19 mm x 19 mm).

SIMATIC HawkEye 51T

The SIMATIC HawkEye 51T is designed to read DPM codes with element sizes as small as 0.006 inches (0.15 mm), and overall symbol size of up to 1.4" x 1.4" (36 mm x 36 mm).

Illumination

Diffused Bright Field LytePype

Specify the 10 degree diffused bright field LytePype for most applications involving dot peen, laser or printed marks on typical surfaces.

Dark Field LytePype

The 30 degree Dark Field LytePype may be required for very low contrast marks or marks on highly reflective surfaces.

Note that unique LytePype models exist for HawkEye 50T ESD systems, please order appropriately.

Function

The SIMATIC HawkEye 50T/51T read and decode direct part mark Data Matrix symbols on a wide variety of industrial surfaces.

The readers are hand held and will read and decode on input from the pistol grip trigger.

Data communication requires connection to a system capable of receiving ASCII serial data via RS 232 at a baud rate between 2400 bps and 115 Kbps or USB V1.1. Operation of the supplied graphical user interface requires a PC running Windows 2000 or Windows XP and equipped with at least one serial or USB port.

Integration

The SIMATIC HawkEye 50T/51T will typically be employed as hand held, on-demand readers in an industrial environment.

They connect as a serial or USB device and transmit ASCII data using RS 232 at configurable baud rates between 2400 bit/s and 115 Kbit/s or USB V1.1. The connection and configuration will be similar to that typically employed for hand held one-dimensional bar code readers.

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Technical specifications

Type	SIMATIC HawkEye 50T	SIMATIC HawkEye 51T
Image processing		
Element size, min.	0,10 mm (0,004")	0,15 mm (0,006")
Contrast, min.	20% at 660 nm	
Image field		
• Near	13 x 13 mm (0.5" x 0.5") with contact	19 x 19 mm (0.75" x 0.75") at 3 mm (0.125") distance
• Remote	19 x 19 mm (0.75" x 0.75") at 25 mm (1") distance	36 x 36 mm (1.4" x 1.4") at 51 mm (2") distance
Depth of field, max.	0 ... 51 mm (0 ... 2")	
Resolution	1024 x 1024 pixels	
Lighting possibilities	• Diffuse bright field LytePype – Suitable for most applications with markings that were applied using dot peen, laser or inkjet	
	• Dark field LytePype – For extremely low contrast laser markings or markings on reflective surfaces	
Interface		
Integrated interface	RS 232 with transmission rates up to 115.2 kbit/s or USB V1.1	
Configuration	Uploading of images and basic settings using simple graphical user interface (GUI) supported by Windows XP/2000 or by decoding with special setup codes that are supplied with the device.	
General data		
Power Supply		
• Reader	12 V at average of 250 mA (peak current 1,250 mA)	12 V at average of 300 mA (peak current 1,700 mA)
• AAC adapter	Input voltage 100 … 250 V AC; 0.5 A; 50/60 Hz	Input voltage 100 … 250 V AC; 0.5 A; 50/60 Hz
Decoding capability	2D data matrix codes	
Operating temperature	0 ... 40 °C (32 ... 104 °F)	
Storage temperature	-20 ... +65 °C (-4 ... +149 °F)	
Air humidity	Max. 95%, no condensation	
Electrical safety	EN 61010 (available soon)	
EMI/high-frequency interference	CE, EN 61326:1998 Class A	
Dimensions (H x D x W) in mm (inches)	160 x 102 x 56 (6.3" x 4.0" x 2.2")	

Selection and Ordering data

		Order No.
SIMATIC HawkEye 50T		
• Handheld reader with RS 232 interface	A	**6GF3020-0HT50-0XX0**
• Handheld reader with USB port	A	**6GF3020-0HT50-0UX0**
• Handheld reader (ESD) with RS 232 interface	A	**6GF3020-0HT50-0EX0**
• Handheld reader (ESD) with USB port	A	**6GF3020-0HT50-0EU0**
SIMATIC HawkEye 51T		
• Handheld reader with RS 232 interface	A	**6GF3020-0HT51-0XX0**
• Handheld reader with USB port	A	**6GF3020-0HT51-0UX0**
Accessories		
Power supply	A	**6GF3020-0AC00-0PS5**
for SIMATIC HawkEye 5xT with RS232 interface. Supplied with adapters for worldwide use. Input 12 V DC (10 - 250 V AC, 47 - 63 Hz); output (12 V DC)		

		Order No.
LytePype lighting system for HawkEye 50T		
• 1.0" x 10 degree diffuse bright field; suitable for almost all DPM codes that were applied using dot peen, laser or inkjet	A	**6GF3020-0AC50-0LB1**
• 1.0" x 30 degree dark field, suitable for low-contrast, laser DPM markings or on reflective surfaces	A	**6GF3020-0AC50-0LD3**
• For ESD version: 1.0" x 10 degree diffuse bright field; suitable for almost all DPM codes that were applied using dot peen, laser or inkjet	A	**6GF3020-0AC50-0LB2**
• For ESD version: 1.0" x 30 degree diffuse dark field, suitable for low-contrast laser DPM markings or on reflective surfaces	A	**6GF3020-0AC50-0LD2**

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SIMATIC HawkEye 50T, 51T

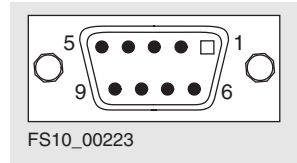|		Order No.
LytePype lighting system for HawkEye 51T		
• 1.5" x 10 degree diffuse bright field; suitable for almost all DPM codes that were applied using dot peen, laser or inkjet	A	**6GF3020-0AC51-0LB1**
• 1.5" x 30 degree dark field, suitable for low-contrast, laser DPM markings or on reflective surfaces	A	**6GF3020-0AC51-0LD3**
SIMATIC HawkEye handheld reader cradle	A	**6GF3020-0AC50-0HR0**
Assembly system for permanent installation of SIMATIC HawkEye 5xT devices		
MX wedge	C	**6GF3020-0AC50-0WD1**
Software package required for sending serial data from the SIMATIC HawkEye 5xT to PC applications		

A: Subject to export regulations: AL = N and ECCN = EAR99H
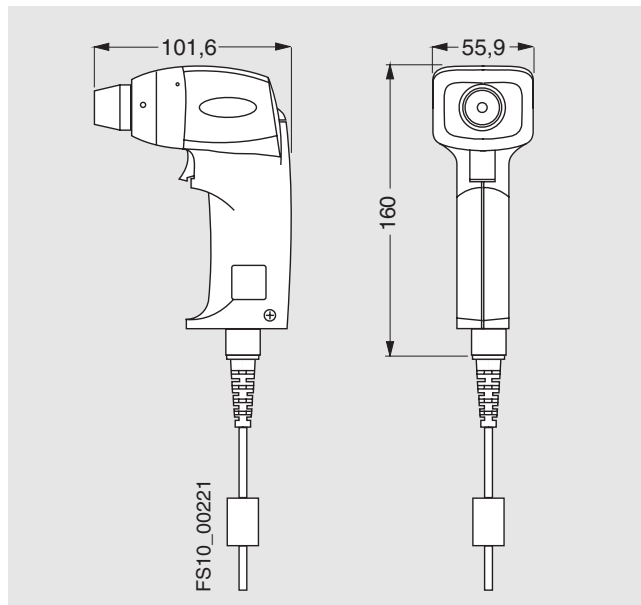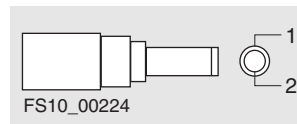C: Subject to export regulations: AL = N and ECCN = EAR99S

■ Dimensions

FS10_00221

■ Schematics

9-Pin D-type Sub (F)

FS10_00223

Pin	Signal name
1	not connected
2	RxD Data In
3	TxD Data Out
4	not connected
5	SG
6	not connected
7	CTS Send In
8	RTS Send Out
9	not connected

Power Jack

FS10_00224

Pin	Signal name
1	+12 V
2	Ground

■ Overview

The SIMATIC HawkEye 52T and SIMATIC HawkEye 53T are high-performance, high resolution readers/scanners for low-contrast two dimensional (2D) Data Matrix direct part marks (DPMs) and large one-dimensional (1D) barcodes. They combine an advanced video image processing illumination engine for reading 2D symbols with a laser scan engine for 1D barcodes into a single hand-held device.

The hand-held readers feature the LytePype^{TM} illumination system that delivers superior performance for DPM reading at high read rates. The HawkEye 52T/53T are contact or near contact readers, and the LytePype guides the operator to position the reader for a simple point-and-shoot operation. The user can easily switch between DPM reading and barcode reading by double clicking the trigger or pressing the button on the back of the unit.

The hand-held readers provide a comprehensive set of programmable features that can be configured to address any data collection application. Setup is simple and performed via the Graphical User Interface PC application program through the serial interface port or by reading special Data Matrix codes supplied with the unit.

■ Benefits

- Specialized on decoding hard to read low contrast Data Matrix codes made by dot peen, laser or ink-jet on a variety of surfaces
- Reading of a broad variety of direct part marks without any parameter adjustments
- LytePype illumination system enhances readability of low-contrast marks
- High-resolution imager for reading very small codes
- High-performance processor for high decoding speed and very robust reading
- Easy reading of one-dimensional barcodes with a laser scanner

■ Application

Industrial and commercial part identification and unit level traceability applications where the part is identified by a Data Matrix (DM) code or barcode and where a hand held reader is required.

Wide range of applications in many industries, e.g.

- Automotive industry: Identification of various automotive power train components (cylinder heads, cylinder blocks, manifolds, etc.)
- Aerospace: Dot peen marks on gas turbine blades
- Medical devices: Laser marks on various medical device components and enclosures
- Electronics: Laser marks on various electronic components or assemblies

■ Design

They are hand-held readers/scanners with an ergonomic pistol grip design. The device may be held in the right or left hand. Reading is commanded by a trigger in front of the pistol grip. The user can easily switch between DPM reading and barcode scanning by double clicking the trigger or pressing the selector button on the back of the unit. The readers are constructed of a high impact durable plastic.

The data from the reader is passed through an attached 8 foot (2.5 m) coiled cable which is terminated at a 9 pin female D shell connector. The read results are passed in RS232 serial form to any connected device capable of receiving serial data.

Power supply and LytePype options are not included as part of HawkEye 52T or 53T systems and must be ordered as individual line items.

SIMATIC HawkEye 52T

The SIMATIC HawkEye 52T is designed to read DPM codes with element sizes as small as 0.006 inches (0.15 mm), and an overall symbol size of up to 1.4" x 1.4" (36 mm x 36 mm). Barcodes with a bar width as small as 0.005 inches (0.13 mm) and an overall code as wide as 6" (15.24 cm) are read with the laser scanner

SIMATIC HawkEye 53T

The SIMATIC HawkEye 53T is designed to read DPM codes with element sizes as small as 0.004 inches (0.10 mm), and overall symbol size of up to 0.75" x 0.75" (19 mm x 19 mm). Barcodes with a bar width as small as 0.005 inches (0.13 mm) and an overall code as wide as 6" (15.24 cm) are read with the laser scanner.

Illumination

Diffused Bright Field LytePype

Specify the 10 degree diffused bright field LytePype for most applications involving dot peen, laser or printed marks on typical surfaces.

Dark Field LytePype

The 30 degree dark field LytePype may be required for very low contrast marks or marks on highly reflective surfaces.

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SIMATIC HawkEye 52T, 53T

■ Function

The SIMATIC HawkEye 52T/53T read and decode direct part mark Data Matrix symbols and barcodes on a wide variety of industrial surfaces.

The readers are hand held and will read and decode on input from the pistol grip trigger.

Data communication requires connection to a system capable of receiving ASCII serial data via RS 232 at a baud rate between 2400 bit/s and 19.2 Kbit/s. Operation of the supplied graphical user interface requires a PC running Windows 2000 or Windows XP and equipped with at least one serial port.

■ Integration

The SIMATIC HawkEye 52T/53T will typically be employed as hand held, on-demand readers in an industrial environment.

They connect as a serial device and transmit ASCII data using RS232 at configurable baud rates between 2400 bit/s and 19.2 Kbit/s. The connection and configuration will be similar to that typically employed for hand held one-dimensional bar code scanners.

■ Technical specifications

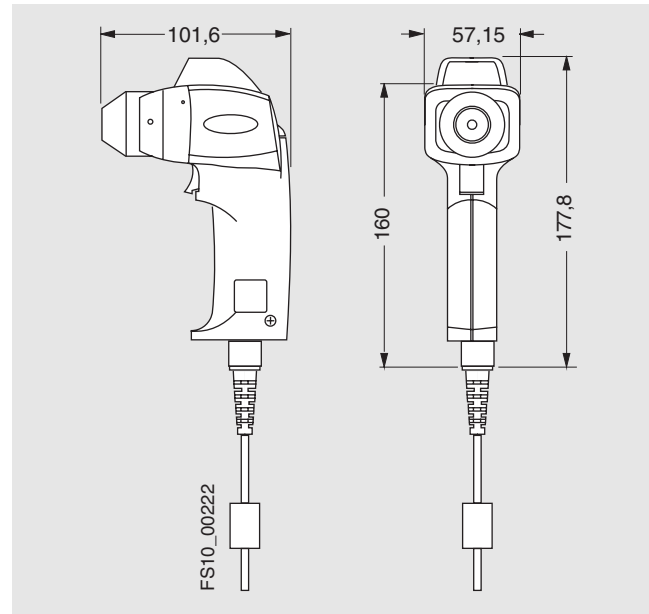| Type	SIMATIC HawkEye 52T	SIMATIC HawkEye 53T
Reads the following codes		
• 2D Matrix Code	Data Matrix, QR Code	
• 1D barcode	Code 39, Code 128, UPC/EAN/JAN/SUP, Interleaved 2 of 5	
Element size, min.		
• 2D Matrix Code	0.15 mm (0.006")	0.10 mm (0.004")
• 1D barcode	0.13 mm (0.005")	0.13 mm (0.005")
Contrast, min.		
• 2D Matrix Code	20% at 660 nm	
• 1D barcode	25% at 650 nm	
Image field		
• Near (contact)	19 mm x 19 mm (0.75" x 0.75")	13 mm x 13 mm (0.5" x 0.5")
• Distant	36 x 36 mm (1.4" x 1.4") at 51 mm (2") distance	19 x 19 mm (1.1" x 1.1") at 25 mm (1") distance
Depth of field, max.		
• Matrix Code reader	0 ... 51 mm (2")	
• Barcode reader	51 … 152 mm (2" to 6")	
Resolution	1024 x 1024 pixels	
Lighting		
• Matrix Code reader	• Diffuse bright field LytePype – Suitable for most applications with markings that were applied using dot peen, laser or inkjet	
	• Dark field LytePype – For extremely low-contrast laser markings or markings on reflective surfaces	
• Barcode reader	Visible laser light, wavelength 650 ± 10 nm	
Interface		
Integral interface	RS232 with transmission rates from 2400 bit/s to 19.2 Kbit/s	
Configuration	Uploading of images and basic setting using simple graphical user interface (GUI) supported by Windows XP/2000 or by decoding with special setup codes that are supplied with the device.	
General data		
Power supply		
• Reader	12 V at average of 250 mA (peak current 1250 mA)	12 V at average of 300 mA (peak current 1700 mA)
• AC adapter	Input voltage 100 … 250 V AC; 0.5 A; 50/60 Hz	Input voltage 100 … 250 V AC; 0.5 A; 50/60 Hz
Operating temperature	0 ... 40 °C (32 ... 104 °F)	
Storage temperature	-20 ... +65 °C (-4 ... +149 °F)	
Air humidity	Max. 95%, no condensation	
Electrical safety	EN 61010 -1: 2002	
EMI/high-frequency interference	CE, EN 61326: 1997+A1+A2+A3 Class A	
Dimensions (H x D x W) in mm (inches)	177.8 x 101.6 x 57.15 (7.0" x 4.0" x 2.25")	

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■ Selection and Ordering data

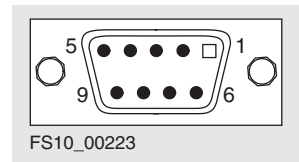|		Order No.
SIMATIC HawkEye 52T	A	**6GF3020-0HT52-0XX0**
Handheld reader with RS232 interface, for 2D code elements from 0.15 mm and 1D code elements from 0.13 mm. Maximum code size 36 mm x 36 mm		
SIMATIC HawkEye 53T	A	**6GF3020-0HT53-0XX0**
Handheld reader with RS232 interface, for 2D code elements from 0.10 mm and 1D code elements from 0.13 mm. Maximum code size 19 mm x 19 mm		
Accessories		
Power supply	A	**6GF3020-0AC00-0PS5**
for SIMATIC HawkEye 5xT with RS232 interface. Supplied with adapters for global use. Input 12 V DC (10 … 250 V AC, 47 … 63 Hz); output (12 V DC).		
LytePype lighting system for HawkEye 53T		
• 1.0" x 10 degree diffuse bright field; suitable for almost all DPM codes that were applied using dot peen, laser or inkjet	A	**6GF3020-0AC50-0LB1**
• 1.0" x 30 degree dark field, suitable for low-contrast, laser DPM markings or on reflective surfaces	A	**6GF3020-0AC50-0LD3**
LytePype lighting system for HawkEye 52T		
• 1.5" x 10 degree diffuse bright field; suitable for almost all DPM codes that were applied using dot peen, laser or inkjet	A	**6GF3020-0AC51-0LB1**
• 1.5" x 30 degree dark field, suitable for low-contrast, laser DPM markings or on reflective surfaces	A	**6GF3020-0AC51-0LD3**
SIMATIC HawkEye handheld reader cradle	A	**6GF3020-0AC50-0HR0**
Assembly system for permanent installation of SIMATIC HawkEye 5xT devices		
MX wedge	C	**6GF3020-0AC50-0WD1**
Software package required for sending serial data from the SIMATIC HawkEye 5xT to PC applications		

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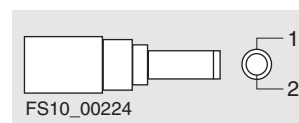C: Subject to export regulations: AL = N and ECCN = EAR99S

■ Dimensions

FS10_00222

101,6   57,15   160   177,8

■ Schematics

9-Pin D-type Sub (F)

FS10_00223

Pin	Signal Name
1	not connected
2	RxD Data In
3	TxD Data Out
4	not connected
5	SG
6	not connected
7	CTS Send In
8	RTS Send Out
9	not connected

Power Jack

FS10_00224

Pin	Signal Name
1	+12 V
2	Ground

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