

MERCURY 2_e



Intrinsically Safe Operator Interface

Ex ia IIC T4



SPECTRA-TEK

The Versatile Operator Interface for Hostile-areas

▼ HAZARDOUS AREAS

▼ HOSTILE ENVIRONMENT

▼ ALL WEATHERS

Mercury 2e is based on the successful Mercury 2 operator interface Terminal, offering enhanced display and Graphics capabilities, which not only improve the operating efficiency and flexibility, but also significantly increase the readability and contrast.

Designed for use in Hazardous Areas, the rugged construction and Intrinsically Safe certification enable it to be used in Zone 0 locations in the continuous presence of flammable vapours.

Because Mercury was designed to IP65 for outside use and can operate in temperatures from -20°C to + 50°C, it is well able to withstand extreme weather conditions and is also appropriate for areas where washdown procedures are necessary.

Simple to install, easy to use and maintenance-free, Mercury is readily interfaced to most plant control systems. Set-up options for communications configurations in single or multi-drop mode, together with other user functions, are selected from the keypad and stored in non-volatile memory via a password protected routine.

Plug-in options for the Mercury 2e use state-of-the-art technology. The high security 'Wiegand effect' card reader, the bar code wand with its decoder and the external contact status inputs are all certified Intrinsically Safe. Recently launched is a new IS Laser Scanner for long range, non-contact bar-code reading.

The full function keypad allows the operator to enter data and commands. A beeper confirms key strokes and allows the host computer to give audible warnings.

Large and small character text can be displayed simultaneously with Graphics images on the high contrast Liquid Crystal Display.

Mercury 2e is designed for use with process computers, PLCs or other control systems capable of serial communication and operates as a dumb terminal, similar to a standard VDU. The messages it displays and the responses to keyboard inputs are determined solely by the software in the host control system to which it is interfaced.

Mercury 2e Terminals also forms part of the **Autoload II** truck, rail and ship loading systems, designed and manufactured by Spectra-Tek for the oil industry. They are also widely used for batch processing in the pharmaceutical, weighing and plant industries.

Using Mercury 2_e



IS Interface Module

The R007-IS Interface Module is a safe-area, DIN rail mounted device which provides the intrinsically safe power and communications signals to a Mercury 2_e in the Hazardous Area. The unit provides mutual galvanic isolation between the hazardous area equipment, the 24V power and the host communications so any conflict in the earthing between the communications and the 24V system is eliminated. This simplifies installation and reduces cost because there is no requirement for an I.S. earth.

Connection to a Mercury in the Hazardous Area is by a simple 4 core cable, carrying power and full duplex serial data together with multidrop tri-state control at up to 1km distance.

Standard RS232/422/485 communications are all available at the Interface module and up to fifteen Mercuries can be operated in a multi-drop system connected to a single serial port in the Host computer.

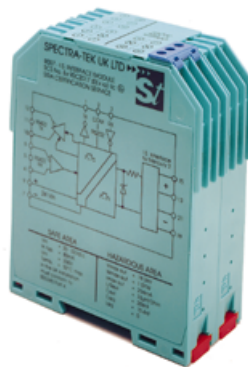
For non-IS applications, the power and RS232 connections may be made directly to the Mercury terminal in a safe area, although the interface module may still be used if long cable runs or multi-drop operation is required.

Data Protocol

Mercury operates a subset of the widely used VT100 protocol, effectively emulating the top left-hand corner of a VDU screen. Alternatively MODBUS can be supplied.

User Memory

7000 characters of non-volatile memory are provided into which the user may download Text or Graphics 'messages'. Each message is assigned a number, allowing instant recall to the Mercury screen by a simple host command. Up to 99 messages may be stored separately, provided the total does not exceed 7000 characters.



Display System

Black characters are contrasted against a silver background to provide a display of exceptional definition and readability. Images may be stored in separate "screen" memory pages, from which combinations of Text and Graphics may be controlled and mixed on the screen.

Simple graphics may be created using the controller's line and block drawing algorithms or alternatively bit-map images may be downloaded, giving direct access to the 240 X 64 pixel array. Complex graphics, created on a PC-based 'Windows' package, can be downloaded using the Bitmap Graphic Converter software available from Spectra-Tek.

Two text sizes are available providing standard and large characters: standard sized characters produce 40 x 8 lines of text. There are 128 standard characters which may be supplemented by a further set of 96 user definable characters, allowing special language or symbols.

The larger characters are held in a separate 96 character generator.

Simultaneous display of text and graphics, together with standard or large characters, are features of the enhanced functionality of the Mercury 2_e.

The text-only version of Mercury 2_e is a low-cost alternative, providing standard sized text only, but including the 96 downloadable characters.

Keyboard

The upper and lower case alphanumeric keyboard uses an array of 30 membrane buttons whose domed surfaces give a tactile 'feel'. Eight of the keys may be assigned special functions, such as "Batch Start". An audible beeper sounds for each keystroke and is mounted behind the membrane, which it uses as a diaphragm. The beeper also signals successful card-reader or bar-code action.

Customised keyboards are available.

Configuration

Mercury is simply configured through the keyboard in a password-protected set-up mode. The configuration is stored securely in non-volatile memory.

Options

IS Card Reader

The wipe-action card reader utilises the Wiegand effect. It is reliable, maintenance-free and extremely robust.



The cards are permanently encoded using embedded wires and are tamper-proof. They may be supplied with customised printing including encapsulated photographs.

IS Bar-code Wand

The barcode wand plugs in with a 1 metre coiled cable and reads all common bar code symbologies from a wipe in either direction. An audible beep from the Mercury confirms a successful read.



This option is supplied complete with a decoder which is factory-installed in the Mercury 2e terminal.

IS Laser barcode scanner

The laser scanner system option is ideal for reading barcodes at a distance, for data collection in a hazardous area. It can interface to the Mercury 2e or operate as a standalone device. Full details are available separately.



IS Contact Inputs

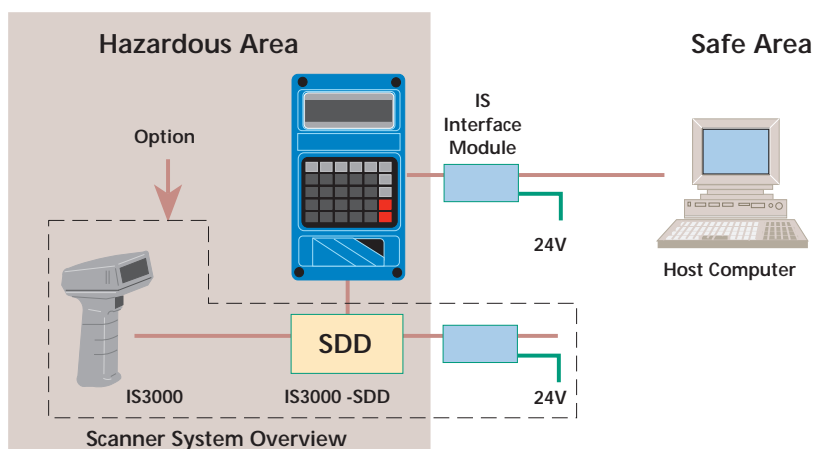
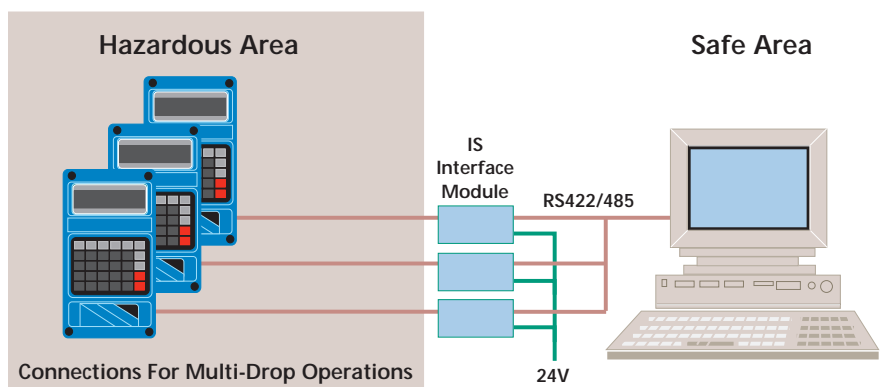
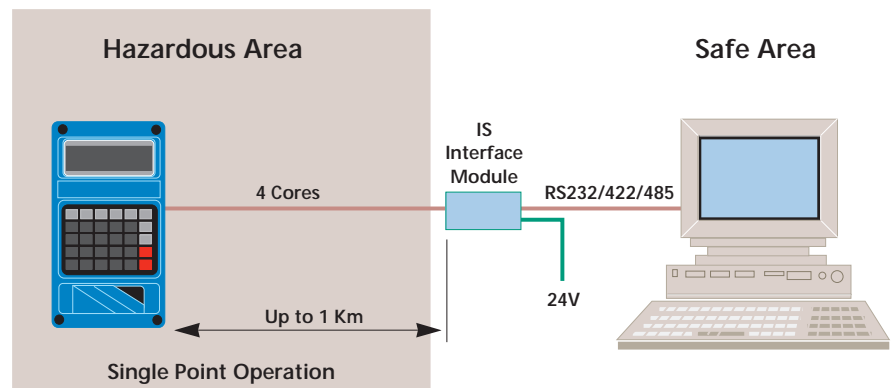
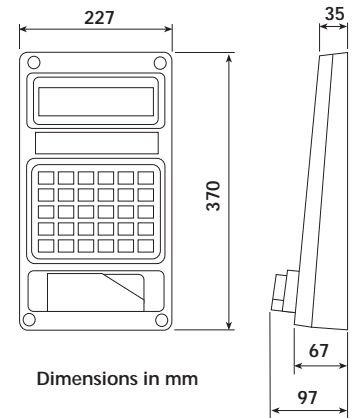
Four inputs are provided to read external dry contacts such as pushbuttons, proximity detectors or plant status switches.

Data from all the above options are available to the host computer via the communications ports, saving extra cabling and barriers.

Installation


Mercury 2e is designed for surface or pole mounting; its slim design and robust case allow considerable freedom of location.

The epoxy-painted aluminium case and sealed polyester keyboard provide protection to IP65, allowing regular washdown. Mercury 2e is resistant to a wide range of aggressive chemicals. An operating temperature range of -20° to 50°C allows year-round outside use, even in harsh climates.



Technical Data


MERCURY 2e

Certification:	Cenelec EEx ia IIC T4, Zone 0, 
Ambient temperature:	-20 to 50°C (operating) -20 to 60°C (storage)
Ingress protection:	IP65
Case:	Aluminium casting, epoxy painted
Weight:	5.5 Kg
Mercury 2e Display:	Supertwist LCD, black characters on silver 40 x 8 characters (text mode) 240 x 64 pixels (graphics mode) Dual character size. Large = approx 12mm Text-only version of Mercury 2e with standard character size only also available
Keyboard:	Polyester membrane type 30 keys Upper case, lower case and numeric character sets Tactile and aural feedback 8 function keys
User memory:	7000 Bytes non volatile, up to 99 stored messages
Connections:	IS version, 4 wire connection to IS interface module Non-IS version, 2 wires power, 3 wires RS232 data
Data protocol:	Based on VT100
Contact inputs:	4 off, internally-powered inputs for volt-free contacts.


IS INTERFACE MODULE

Hazard area connections:	Data/power to Mercury, 4 wires Galvanically Isolated, 20V, 100Ω
Cable Parameters:	4 cores or 2 twisted pairs, 1 km max 284 nF max 33μH / Ω max 20 Ω per core max
IS earth:	Not required
Power:	20 - 32V dc, 2W nominal
Environment:	Safe area
Ambient temperature:	0 to 50°C (operating) -20 to 60°C (storage)
Humidity:	95%, non-condensing
Data connections:	RS232, 422, 485
Mounting:	35mm rail to DIN 46277 or screws on 90 mm centres

IS CARD READER

Certification:	Cenelec EEx ia IIC T4, Zone 0, 
Type:	Wiegand effect, swipe action
Coding:	32 bits plus start and stop. 16 bits customer code, 16 bits card code
Ambient Temperature:	-20 to 50°C
Ingress protection:	IP65

IS BAR-CODE WAND AND DECODER

Certification:	Cenelec EEx ia IIC T4, Zone 0, 
Scan speed:	10 to 120 cm/sec, bidirectional
Readable codes:	Code 39 (3 of 9), extended code 39, code 128, UPC/EAN/JAN, interleaved 2 of 5, codabar (NW7)
Cable:	1 m coiled
Ambient temperature:	-20 to 50°C (operating) -40 to 75°C (storage)
Ingress protection:	IP64

Further Information

Further information on Mercury 2e and the IS3000 laser barcode scanner may be obtained from our Sales Office shown below or from any of our Distributors and Sales Representatives, world-wide.

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Documentation No STM/050/E/ 21.06.94

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