Vital-Processor
Data Logger

Save

USB
Flash Drive

APPENDIX A – TECHNICAL DATA

Adj.   1   2   3   Browse

SPECIFICATIONS

Physical
Size (without mounting brackets)
Length: 9.5″
Height: 7.2″
Depth: 2.6″
Weight
2.5 lb.

Environmental
Storage
Temperature: -50 °C to 85 °C
Humidity: 0 to 95 %, non-condensing
Operating
Temperature: -40 °C to 72 °C
Humidity: 0 to 95 %, non-condensing

Mounting
Shelf or backboard (includes mounting brackets)

Construction
Chassis
Fully enclosed, anodized aluminum
Externally accessible keypad, LEDs and connectors
Electrical
All components mounted on conformal coated, internal PCBs

Power
Voltage
Range: 9 to 36 Vdc
Consumption
Typical: 2 W
Maximum: 3.5 W (with GPS Receiver, Ethernet and Modem options)

Isolation
Power
Minimum: 3800 Vdc from B and N terminals to chassis and inputs
Analog Inputs
Minimum: 3800 Vdc to any terminal
Input to Adjacent Input
Analog: minimum 3200 Vdc
USB Host and Device Ports
Minimum: 3800 Vdc to any terminal
GPS Receiver and Ethernet Port (optional)
Minimum: 3800 Vdc to any terminal
Internal Modem (optional)
Designed to meet FCC part 68 standards

Capacities
Inputs
Digital: 999, as available from Siemens S7-300
Analog: 4, voltage or current (optional)
Virtual: 8, user assigned
Timer: 16, user assigned
Outputs
Relay: 1, form C, rated for 2 A at 24 Vdc or 1 A at 125 Vac, maximum switching capacity of 125 VA or 60 W, service life 1 million electrical (typical)
Event Storage
Standard: 284,785 records
Maximum: 1,182,769 records
Liquid Crystal Display
Characters: 80 total on 4 lines
Viewing Area: 2.8″ by .8″
Front Panel Keypad
Quantity: 20 keys

Physical Inputs
Input Impedance
Analog: minimum 10 MOhms
Range
Analog DC Voltage: 3 scales, ±25.5 Vdc, +51.1 Vdc, ±255 Vdc
Analog AC Voltage: 2 scales, 25.5 Vac, 255 Vac
Analog Current: 2 scales, ±25.5 Adc, 25.5 Aac
Event Validation Times
Digital: n/a, Siemens S7-300 transmits 999 bit states 3 times per second using 3964R protocol
Analog: fast and slow filter settings

Analog Limit Values
Voltage
High and Low Limits: in multiples of .1 V or 1 V
Current
High and Low Limits: in multiples of .1 A

Analog Input Accuracy
Typical Voltage: ±.15 V or ±1.5 V
Typical Current: ±.2 A

Virtual Inputs
Definitions
Any logical association shared by 1 to 4 variables (i.e., Digital, Analog, Timer or other Virtual Inputs)
Assigned by defining the state of the Virtual Input for each combination of variable states
Reporting
Creates standard Event Records
Relay can be controlled by each Virtual Input
Modem (optional) can be enabled to dial out Event Records

Timer Inputs
Programming
Any input can be assigned as a trigger or terminating source
On or Off events can be assigned as a trigger or terminating source
Limit Values
High and Low Limits: in multiples of .1 seconds
Range: 0.0 to 999.9 seconds
Reporting
Measured Time is reported in each Timer Input Event Record
Violation of Limit Values are also reported

Temperature Sensing
Usage: measures and reports internal temperature of logger
High and Low Limits: -67 °F to 257 °F

Memory
Type
Non-volatile, Event Records and Setup Database are stored in flash memory chip
Newest data over-writes oldest data, 129th day over-writes first day
Storage Longevity
Infinite with power off
Rated for 100,000 write operations

Ports
RS-232
Quantity: 1, for use with a PC
Terminal Emulation: ANSI
Baud Rates: 300, 600, 1200, 2400, 4800, 9600, 19,200, 38,400, 57,600, 115,200
Bit Format: 8-N-1
Vital-Processor Port
Quantity: 1, connects to CP 340 of Siemens S7-300
Bit Messaging: Siemens S7-300 transmits 999 bit states 3 times per second
Protocol: Siemens 3964R
Baud Rates: 300, 600, 1200, 2400, 4800, 9600, 19,200, 38,400, 57,600, 115,200
Default Rate: 9600
Bit Format: 8-N-1
USB Host
Compatible with any FAT-32 formatted flash drive
Can create a text file of Event Record data from any time span
Can be used to update firmware
USB Device
Eliminates need for serial comm port, data transfer rates of 4.71 Mbps

Ports (continued)
Ethernet (optional)
Type: 10/100 Base-T

Protocols: TCP/IP, Telnet, SNTP-Unicast and -Multicast

Concurrent Sessions: Telnet (2)

Provides remote or local access via TCP/IP

Data transfer rates of 4.70 Mbps

User assignable IP Address, port, sub-net mask, Unicast IP Address

Modem (optional)
Provides remote access, auto-answer

GPS Receiver (optional)
Used to provide precise, real-time clock control, latitude and longitude coordinates

Connectors
Power
Detachable, tension clamp, 4-position, 12 to 22 AWG

Dual B and N terminals

Analog Inputs
Detachable, tension clamp, 8-position, 12 to 22 AWG

Relay
Detachable, tension clamp, 3-position, 12 to 22 AWG

Normally open, normally closed and common terminals per relay

Terminal Port
DE-9 male, configured as modified DCE

Vital-Processor Port
DE-9 male, configured as modified DCE

USB Host Port
USB Type A female

USB Device Port
USB Type B female

Telephone Line
RJ-11 female

Ethernet Port (optional)
RJ-45 female

GPS Receiver (optional)
MCX female

Indicators
LCD Panel
Includes LED back lighting for enhanced visibility

Displays numerous command menus for configuring the Data Logger and retrieving data

Front Panel LEDs (3)
Power: green

Terminal: green, flashes with send and receive data

Modem: green, flashes with send and receive data and ringing

Ethernet Port LEDs (2 optional)
Green: link established

Yellow: data activity

Controls
Keypad
Located on front panel, below LCD

Keys: 0-9, Browse, Alpha, Setup, Esc, Enter, Save/., left, right, up, down/-

LCD Contrast Adjust
Single-turn pot., accessible from front panel

Internal Clock
Accuracy
Typical: ±8 seconds per month (3 ppm) when not synchronized

Volatility: maintains accuracy for minimum of 30 days with loss of power

Resolution: .1 seconds for all Event Records

Siemens S7-300 transmits 999 bit states 3 times per second

Sync Interval
SNTP-Unicast: via time server, 5 minutes past each hour (requires Ethernet Port option)

SNTP-Multicast: per time server schedule (requires Ethernet Port option)

GPS: once per hour (requires GPS Receiver option)

Operation
Time Zones: selectable from 7 different North American settings

Daylight Saving Time: enable or disable automatic adjustment

Leap Year: automatically adjusted

GPS Receiver (optional)
Includes PCB and external antenna

PCB
Plugs into mating connector inside Data Logger

Antenna
Size: diameter 1.8″, height .6″ (not including mounting screw)

Weight: 2 oz. (less cable)

Operating Temperature: -40 °C to 85 °C

Mounting: bulkhead mountable to any surface less than 3/8″ thick

Location: unobstructed skyward orientation, for use outdoors

Password Protection
Administrative Level
Access: unrestricted to all functions

Length: 8 characters

Restricted Level
Access: Event Record and Setup Database viewing only

Length: 8 characters

Passcode
Access: limited modifications to Setup Database via front panel

Length: 8 digits

Internal Modem (optional)
Type
V.34, 33,600 Baud, data compression and error correction

Usage
Remote access via auto-answer operation

Allows dial-out alarm reporting of Virtual Input records

Compliance
Designed to meet FCC part 68 standards

Dial-out Alarms (optional)
Calling Method
Primary and secondary dial numbers, multiple attempts

Tone or pulse dialing

Data
Issues Virtual Input Event Records if enabled by Virtual Input definition

MICRO-AIDE reserves the right to make changes, at its sole discretion, to any specification listed herein.

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TRANSFER RATES

Table 14 on page 89 lists typical bit transfer rates for each of the VDL-A's user-accessible ports. In each case the same 20,000 Event Records with no-detail formatting were either dumped to a PC file or saved directly to a flash drive. The times listed are normalized relative to 1,000 Event Records. If speed is a concern, using the USB Device Port is highly recommended.

Port	Time to transfer 1,000 Event Records (sec)	Actual transfer rate (bps)	Relative speed compared to 38,400
Terminal Port (38,400)	19.0	38,396	Used as reference
Internal modem	19.4	37,649	1.0 times faster
Terminal Port (115,200)	6.4	114,845	3.0 times faster
USB Host	.8	n/a	22.4 times faster
Ethernet Port	.2	4,704,075	122.5 times faster
USB Device Port	.2	4,714,063	122.8 times faster

Table 14: Bit Transfer Rates by Port

TERMINAL PORT CABLE

Two of the following cable are included with every VDL-A S7. It is used to connect a PC to the VDL-A's Terminal Port. It is also used to connect the VDL-A to the CP 340 Communications Processor of the S7-300.
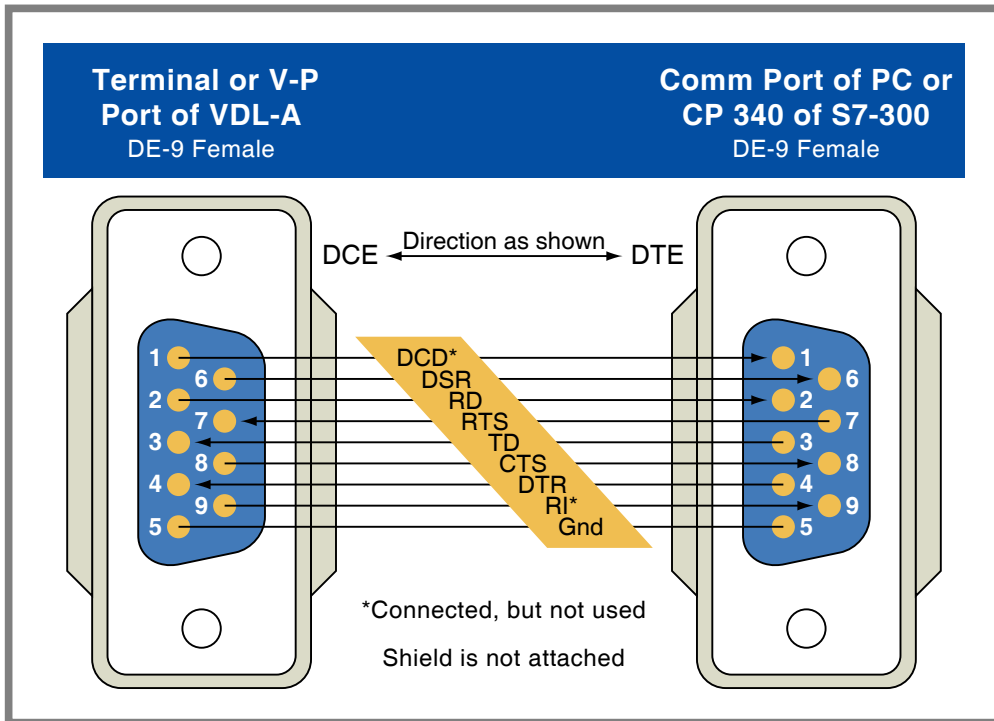

Figure 7: Terminal Port Cable - Wiring Diagram