![Simplex]

Introduction

The VESDA Intelligent Interface is part of a VESDA early smoke detection system and is compatible with 4100ES/4010ES Fire Alarm Control Panels (FACP). The Intelligent Interface allows the system to communicate with the FACP through the VESDA High-Level Interface (HLI), which provides gateway functionality between the VESDA system and the FACP.

Through this interface the user can monitor:

- Device threshold levels
- Device sensitivity
- Detector chamber voltage
- Detector head status
- Detector air flow status

These as well as other options are explained further in the manual.

For information on installing the VESDA Intelligent Interface, consult the *4100/4120-Series VESDA Interface Cards Installation Instructions, 574-050*.

Compatibility & Requirements

The Intelligent Interface can be used with the following VESDA systems:
- MiniVESDA-50 (1 pipe/channel supported)
- VESDA Laser Plus (1 pipe/channel supported)
- VESDA Laser Scanner (4 pipe/channel supported)

The Intelligent Interface is compatible with the following Simplex® FACPs:
- 4100ES FACPs
- 4010ES FACPs

Reference documents

The following documents are referred to in this manual:
- Xtralis product specific manual (included with the VESDA Equipment)
- *4100/4120-Series VESDA Interface Cards Installation Instructions, 574-050*
- *4100ES Operator's Manual, 579-197*
- *4010ES Operator's Manual, 579-969*

In this publication

This publication discusses the following topics:

VESDA Panel Display

Default VESDA Unit Passcodes

The VESDA Unit comes with a set of default preprogrammed passcodes.

Note: It is highly recommended to personalize the passwords once the system has been initially accessed.

The default passcodes are as follows:

Operator level:

• User ID ⇨ USR

• PIN ⇨ 1111

Administrator level:

• User ID⇨ ADM

• PIN⇨1413

Distributor level:

• User ID ⇨ DST

• PIN⇨1451

VESDA General Panel Display Information

Point Banner

The Point Banner for a VESDA device is based off its point type. The banner makes no distinction as to the VESDA device type. Two point types support the VESDA devices. They are:

S3SMOKE	⇨	"SMOKE DETECTOR"
S3UTIL	⇨	"UTILITY MONITOR"

Primary Status

The Primary Status of a VESDA device is derived from the generic device type (VESDA), point type and the logical state of the point. S3SMOKE has a primary status of FIRE and S3UTIL has a primary status ON/OFF.

Detect Behavior

The alarm detect bit for VESDA devices is only set when the third fire threshold is crossed. This implies that the area being protected is not evacuated by default when the alert and action thresholds are crossed.

VESDA Threshold Levels

The VESDA threshold levels are as follows:

Sensitivity Range:

• 0.005 to 20.00% obs/m (0.0015 to 6.25% obs/ft)

Threshold Setting Range :

• Alert: 0.005 – 1.990% obs/m (0.0015 - 0.6218% obs/ft)

• Pre-Alarm: 0.010 –1.995% obs/m (0.0031 - 0.6234% obs/ft)

• Fire: 0.015 – 20.00% obs/m (0.0046 – 6.25% obs/ft) **

** Limited to 4% obs/ft for UL approved projects.

VESDA Panel Display, *continued*

| **VESDA Front Panel displays** | When a VESDA device crosses its action threshold, an LED lights up and a beeping sound is emitted. See the FACP Operating Instructions for details on what action needs to be performed. The Primary Status screens on the front panel might be displayed as shown below: |

S3SMOKE

```
M2-4 CUSTOM LABEL

SMOKE DETECTOR                               ACTION
```

```
M2-4 CUSTOM LABEL

SMOKE DETECTOR                                ALERT
```

```
M2-4 CUSTOM LABEL

SMOKE DETECTOR                           FIRE ALARM
```

S3UTIL

```
M2-4 CUSTOM LABEL

UTILITY MONITOR                             STAGE 1
```

```
M2-4 CUSTOM LABEL

UTILITY MONITOR                             STAGE 2
```

```
M2-4 CUSTOM LABEL

UTILITY MONITOR                             STAGE 3
```

| **Active Lists** | VESDA devices are placed on the appropriate active list whenever an abnormal condition occurs. |

If the device is configured with point type S3SMOKE, a fire condition is indicated at the front panel and any remote annunciators configured to annunciate the VESDA device. This condition is resounded for each threshold level crossed.

It should be noted that VSCAN devices share some detector trouble statuses. If one of these trouble statuses is asserted, four troubles will be annunciated in the system (one for each corresponding TrueAlarm device).

VESDA Panel Operations

VESDA Card Status verification

The VESDA card status can be displayed at the panel.

The available status options are:

- Card Missing/Failed: The Panel is unable to communicate with the card.
- Wrong Card: Another card is already programmed at that address.
- VESDA Communications Failure: The VESDA Interface card does not see the VESDAnet or it does not see one particular device.
- Head Troubles: This indicated that the particular VESDA detector on the VESDAnet has a minor trouble.

Accessing Historical Logs

VESDA devices are logged the same way as other points in the FACP system. A Historical Log is maintained, and can be displayed (as shown below) on the front panel or printed, if a printer is configured and attached to the FACP.

```
ENTRY xx      11:12:13 AM      TUE      19-SEP-14

FIRE ALARM
```

```
M2-4 CUSTOM LABEL

SMOKE DETECTOR                                ACTION
```

Disable / Enable Devices

VESDA devices can be disabled and enabled by pressing the corresponding DISABLED/ENABLED keys on the FACP front panel. Their behavior is consistent with existing TrueAlarm disable and enable processing. For more details on front panel keys see the FACP's operating instruction.

System Reset

VESDA detectors can be configured at the units to latch when a threshold is reached. If the detectors are configured in this manner, the condition can be cleared by performing a system reset (pressing the SYSTEM RESET button) on the FACP front panel. If the VESDA detectors are configured to not latch, a SYSTEM RESET is not needed to clear the abnormal condition at the VESDA detector, but is still needed to clear the alarm condition at the FACP front panel.

Computer Port Verification

The only valid status types that can be queried from a computer port is based on the point type shown in the following example. For more detailed information consult the FACP programmer's manual.

Valid Status Types:

S3SMOKE	⇨	F, A, T	(Fire, Primary, Trouble)
S3UTIL	⇨	A, U, T	(Primary, Utility, Trouble)

VESDA Status Alert Functions

Status Alert Function

The VESDA air sampling smoke detection system intelligently interfaces with the main FACP to monitor the status of system detectors. The status of these monitors can trigger Troubles that can be acknowledged from the FACP panel. Consult the FACP' operator's manual for instructions on how to acknowledge troubles.

Detector Air Flow Status

The Detector Air Flow Status informs you that there is a problem with the air flow within a VESDA unit. The condition could indicate one of the following conditions:

- Fan trouble
- Pipe obstruction
- Pipe break

You will need to investigate the cause of the air flow problem. It should be noted that if the VESDA Scanner is equipped with four monitoring units, this status will always be the same for the four TrueAlarm devices associated with that unit (i.e., four troubles will be reported).

```
M2-4 CUSTOM LABEL

SMOKE DET                          AIR FLOW TROUBLE
```

Detector Head Status

The Detector Head Status is a generic grouping of possible abnormalities that can occur to a VESDA detector head. It should be noted that if the VESDA Scanner is equipped with four monitoring units, this status will always be the same for the four TrueAlarm devices associated with that unit (i.e. four troubles will be reported).

```
M2-4 CUSTOM LABEL

SMOKE DETECTOR                         HEAD TROUBLE
```

Detector Chamber Voltage

The Detector Chamber Voltage is always equal to zero. It should be noted that since all four monitoring units in a VESDA Scanner are connected to the same detector unit, this status will always be the same for the four TrueAlarm devices associated with that unit.

```
M2-4 CUSTOM LABEL
DETECTOR CHAMBER VOLTAGE = 0 Volts
```

Device Sensitivity

This screen informs you of the sensitivity threshold set for the tube associated with the VESDA TrueAlarm device. The valid range is 50% to 200% in increments of 10%. The percentage is based on the sensitivity of the detector head present in the VESDA detector. Unlike the previously listed detector statuses, this status is unique for each TrueAlarm device. See the Xtralis product specific manual for more details on programming the VESDA unit.

```
M2-4 CUSTOM LABEL
DEVICE SENSITIVITY = 70%
```

Device Threshold Level

This status indicates the number of bar graph elements that are lit on the VESDA detector. The valid range of values is 0 - 20. This status is unique for each TrueAlarm device.

```
M2-4 CUSTOM LABEL
DEVICE THRESHOLD = 2
```

Programming

VESDA Point Programming	Use the following point types for the following VESDA systems: • VESDA Laser Plus ⇨ VE70D • VESDA Laser Scanner ⇨ VSCAN • Mini VESDA50 ⇨ VMIN50 **Note:** There can be a maximum of 30 VESDA units per interface card.
VESDA Addressing	The VESDA unit's address is obtained through the FACP Programmer when a VESDA point is added to the job. VESDA units require the use of 4 addresses. When the VESDA point is added to the job, the programmer will automatically assign the next 4 available address to the VESADA unit.
VESDA Zones	The VESADA zone will be the Unit Address (1 through 30). **Note:** A VESADA unit should never be programmed as Zone 0. A unit programmed as Zone 0 will not indicate any status change **VESDA zones** • Zone 1 is always addresses 1-4 • Zone 2 is always addresses 5-8 • Zone 3 is always addresses 9-12 • ... • Zone 30 is always addresses 117-120
VESDA S3SMOKE Equations	When a Priority 1 Alarm on an S3SMOKE point type is triggered from a VESDA device, the FACP resounds for Stage 1, Stage 2, and Stage 3 alarms. Consult the following equations for S3SMOKE actions:

Equation 1:
Label: Alert action for S3SMOKE
COMMENTS:
  INPUTS:
    The LEVEL at or above STAGE 1 ALARM of:
      M1-1   S3SMOKE   S3SMOKE TEST
  OUTPUTS:
    HOLD points ON pri=9,9
      AUX3   RELAY   COMPUTER ROOM FAN CONTROL RELAY
  END:

Equation 2:
Label: Action action for S3SMOKE
COMMENTS:
  INPUTS:
    The LEVEL at or above STAGE 2 ALARM of:
      M1-1   S3SMOKE   S3SMOKE TEST
  OUTPUTS:
    HOLD points ON pri=9,9
      SIG3   SIGNAL   COMPUTER ROOM PRE-SIGNAL
  END:

Programming, *continued*

VESDA
S3SMOKE
Equations
	Equation 3:
	Label: Fire1 and/or Fire2 action for S3SMOKE
	COMMENTS:
	  INPUTS:
	    The LEVEL at or above STAGE 3 ALARM of:
	      M1-1 S3SMOKE S3SMOKE TEST
	  OUTPUTS:
	   HOLD points ON pri=9,9
	     AUX4 RELAY COMPUTER ROOM SHUNT TRIP RELAY
	  END:
	
	Equation 4
	Label: Stage1 action for S3UTIL
	COMMENTS:
	  INPUTS:
	    The LEVEL at or above STAGE 1 ALARM of:
	      M1-5 S3UTIL S3UTIL TEST
	  OUTPUTS:
	   HOLD points ON pri=9,9
	     P256 TROUBLE VESDA ALERT PSU
	   HOLD points ON pri=9,9
	     AUX3 RELAY COMPUTER ROOM FAN CONTROL RELAY
	  END:
	
	Equation 5
	Label: Stage2 action for S3UTIL
	COMMENTS:
	  INPUTS:
	    The LEVEL at or above STAGE 2 ALARM of:
	      M1-5 S3UTIL S3UTIL TEST
	  OUTPUTS:
	   HOLD points ON pri=9,9
	     P257 SUPERV VESDA ACTION PSU
	   HOLD points ON pri=9,9
	     SIG3 SIGNAL COMPUTER ROOM PRE-SIGNAL
	  END:
	
	Equation 6
	Label: Stage3 action for S3UTIL
	COMMENTS:
	  INPUTS:
	    The LEVEL at or above STAGE 3 ALARM of:
	      M1-5 S3UTIL S3UTIL TEST
	  OUTPUTS:
	   HOLD points ON pri=9,9
	     P258 FIRE VESDA FIRE PSU
	   HOLD points ON pri=9,9
	     AUX4 RELAY COMPUTER ROOM SHUNT TRIP RELAY
	  END:

Programming, *continued*

VESDA
S3SMOKE
Equations
	Equation 7
	Label: Reset Stage1 pseudo S3UTIL
	COMMENTS:
	 INPUTS:
	  The ON State of A21 System Reset Pulse Timer
	  And NOT the LEVEL at or above STAGE 1 ALARM of:
	   M1-5 S3UTIL S3UTIL TEST
	 OUTPUTS:
	  HOLD points OFF pri=9,9
	   P256 TROUBLE VESDA ALERT PSU
	  HOLD points OFF pri=9,9
	   AUX3 RELAY COMPUTER ROOM FAN CONTROL RELAY
	 END:

Equation 8
Label: Reset Stage2 pseudo for S3UTIL
 COMMENTS:
 INPUTS:
  The ON State of A21   System Reset Pulse Timer
  And NOT the LEVEL at or above STAGE 2 ALARM of:
   M1-5   S3UTIL   S3UTIL TEST
 OUTPUTS:
  HOLD points OFF pri=9,9
   P257   SUPERV   VESDA ACTION PSU
  HOLD points OFF pri=9,9
   SIG3   SIGNAL   COMPUTER ROOM PRE-SIGNAL
 END:

Equation 9
Label: Reset Stage3 pseudo for S3UTIL
 COMMENTS:
 INPUTS:
  The ON State of P0   Detector Reset Keypress
  And NOT the LEVEL at or above STAGE 3 ALARM of:
   M1-5   S3UTIL   S3UTIL TEST
 OUTPUTS:
  HOLD points OFF pri=9,9
   P258   FIRE   VESDA FIRE PSU
  HOLD points OFF pri=9,9
   AUX4   RELAY   COMPUTER ROOM SHUNT TRIP RELAY
 END:

VESDA Fault Messages and Descriptions

VESDA Fault Messages and Descriptions

This section lists the description of the fault messages that can be obtained on a VESDA system.

Table 1. Head Fault Descriptions

VESDAnet Fault Codes	Fault Description	Fault Message Type
0	Aspirator Not Working	Head Fault
2	Communications Fault, port A	Head Fault
3	Head Processor Board Fault, (pre-processor or RCT)	Head Fault
4	Filter has been removed	Head Fault
5	Loss of Reference Head Communications	Head Fault
7	Software Incident	Head Fault
8	Aspirator Regulation Control not Achieved	Head Fault
9	Communications Fault, Port B	Head Fault
10	Display is Configured as Present but Handshake failed.	Head Fault
11	Filter Clogging Warning (based on age or dust count)	Head Fault
12	Default Node Configuration	Head Fault
13	More than one head in zone - incorrect configuration	Head Fault
14	Default flow sensor configuration	Head Fault
16	Relays are Configured as present but not found	Head Fault
17	No messages from head within health check period	Head Fault
18	Too many nodes in one zone	Head Fault
23	Preamp signal too low / laser, preamp, detector, or PIC	Head Fault
24	No msg from non-head zone module within health check period	Head Fault
25	Port A configured for end of chain and link established	Head Fault
26	Port B configured for end of chain and link established	Head Fault
27	AutoLearn failed due to Fire 1 alarm of background level too high	Head Fault
29	Default Manufacturer Configuration	Head Fault
30	Default Condition Category Configuration	Head Fault
31	Default Node Configuration	Head Fault
32	Time Synchronization Fault	Head Fault
33	Default PIN Table	Head Fault
34	Head Configuration Default in Use fault	Head Fault
35	Programmer Configuration Default in Use fault	Head Fault
36	Head event log contained errors and has been emptied	Head Fault
37	Head Calibration Defaults in Use fault	Head Fault
38	Head Delayed-Calibration Defaults in Use fault	Head Fault
55	More than one power supply in the same power zone	Head Fault
56	The RTC is not behaving	Head Fault
57	Default Display Configuration	Head Fault
59	Fault used by fault test mode (Same LEDs & Relays as Preamp Signal Low)	Head Fault
65	Incompatible software version on a device	Head Fault

VESDA Fault Messages and Descriptions, *continued*

VESDA Fault Messages and Descriptions

Table 1. Head Fault Descriptions (Continued)

VESDAnet Fault Codes	Fault Description	Fault Message Type
66	Configured minimum Head Status interval too short	Head Fault
67	Configured network delay too short	Head Fault
68	(PC-Link) HLI Configuration set to defaults	Head Fault
69	Reference Head is itself referenced	Head Fault
	Unknown or new fault	Head Fault

Table 2. Head Fault, Battery and Mains Fault Descriptions

VESDAnet Fault Codes	Fault Description	Fault Message Type
1	Power Supply Battery Failure	Head Fault, Battery and Mains Fault
6	Power Supply DC Output Failure	Head Fault, Battery and Mains Fault
15	Power Supply AC Input Failure	Head Fault, Battery and Mains Fault
60	Power Supply Battery Charger Failure	Head Fault, Battery and Mains Fault
61	Power Supply Fuse Failure	Head Fault, Battery and Mains Fault
62	Power Supply PIC Failure	Head Fault, Battery and Mains Fault
63	Power Supply Status Message Not Received	Head Fault, Battery and Mains Fault
64	PSL Relay Failure	Head Fault, Battery and Mains Fault

Table 3. Head Fault, Scanner Fault Descriptions

VESDAnet Fault Codes	Fault Description	Fault Message Type
28	Scanner presence or absence does not match configuration	Head Fault Scanner Fault
58	Too many scans in a given period	Head Fault Scanner Fault
82	Valve jams shut on pipe 1	Head Fault Scanner Fault
83	Valve jams open on pipe 1	Head Fault Scanner Fault
84	Valve jams shut on pipe 2	Head Fault Scanner Fault
85	Valve jams open on pipe 2	Head Fault Scanner Fault

VESDA Fault Messages and Descriptions, *continued*

VESDA Fault Messages and Descriptions

Table 3. Head Fault, Scanner Fault Descriptions (Continued)

VESDAnet Fault Codes	Fault Description	Fault Message Type
86	Valve jams shut on pipe 3	Head Fault Scanner Fault
87	Valve jams open on pipe 3	Head Fault Scanner Fault
88	Valve jams shut on pipe 4	Head Fault Scanner Fault
89	Valve jams open on pipe 4	Head Fault Scanner Fault

Table 4. Flow Fault Descriptions

VESDAnet Fault Codes	Fault Description	Fault Message Type
19	Flow sensor on pipe 4 failure	Flow Fault
20	Flow sensor on pipe 3 failure	Flow Fault
21	Flow sensor on pipe 2 failure	Flow Fault
22	Flow sensor on pipe 1 failure	Flow Fault
39	Flow exceeds urgent high threshold on pipe 4	Flow Fault
40	Flow exceeds minor high threshold on pipe 4	Flow Fault
41	Flow under minor low threshold on pipe 4	Flow Fault
42	Flow under urgent low threshold on pipe 4	Flow Fault
43	Flow exceeds urgent high threshold on pipe 3	Flow Fault
44	Flow exceeds minor high threshold on pipe 3	Flow Fault
45	Flow under minor low threshold on pipe 3	Flow Fault
46	Flow under urgent low threshold on pipe 3	Flow Fault
47	Flow exceeds urgent high threshold on pipe 2	Flow Fault
48	Flow exceeds minor high threshold on pipe 2	Flow Fault
49	Flow under minor low threshold on pipe 2	Flow Fault
50	Flow under urgent low threshold on pipe 2	Flow Fault
51	Flow exceeds urgent high threshold on pipe 1	Flow Fault
51	Flow exceeds minor high threshold on pipe 1	Flow Fault
53	Flow under minor low threshold on pipe 1	Flow Fault
54	Flow under urgent low threshold on pipe 1	Flow Fault