Fiber SenSys
PERIMETER SECURITY

FD50x Fiber-Optic Intrusion Detection System
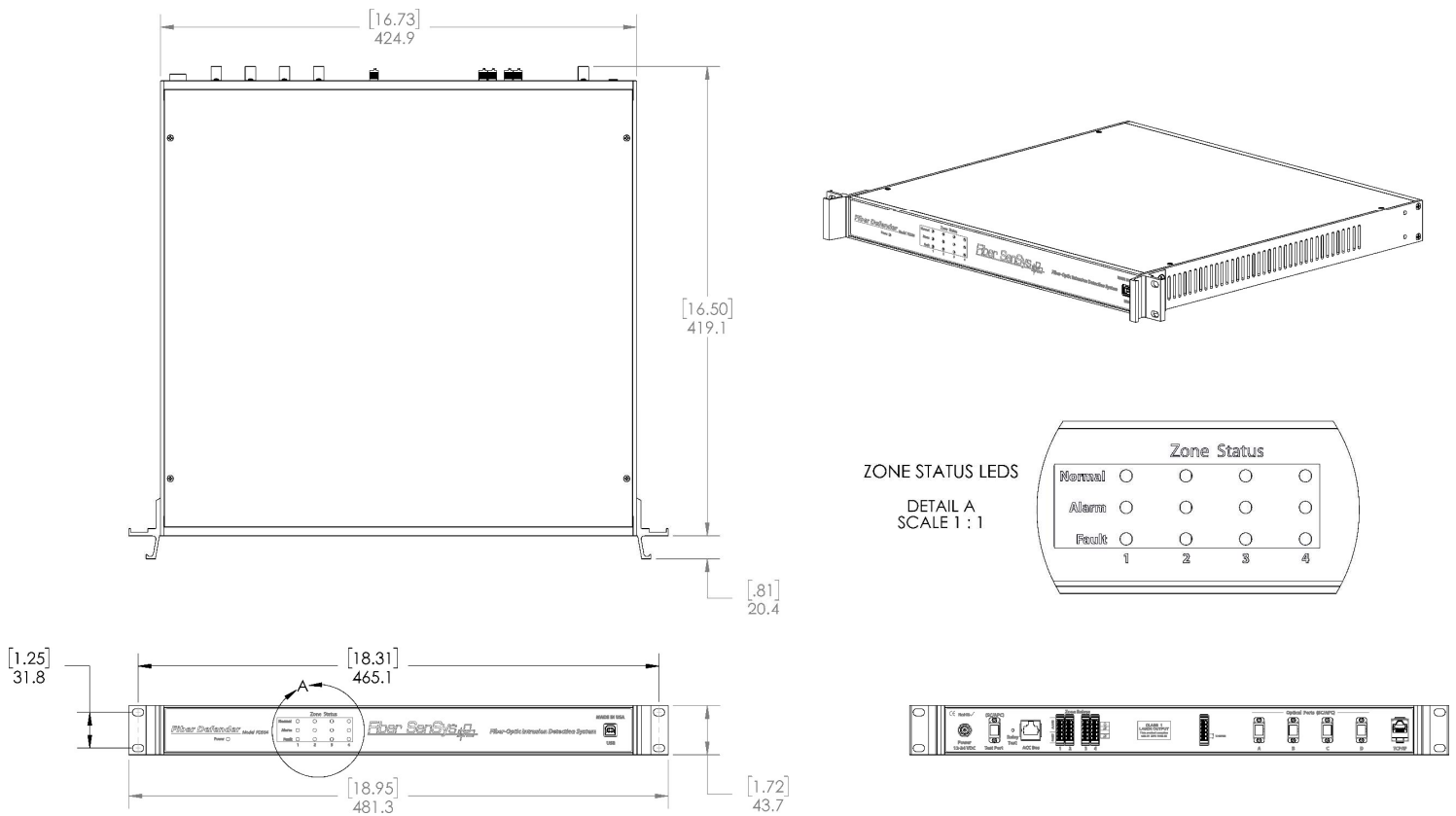## *Specification Sheet*

Designed to detect potential intruders attempting to breach a perimeter, the **FD504™/FD508™** Alarm Processing Unit (APU) is a 1-U rack-mounted module designed for standard 19-inch equipment racks. The **FD504/FD508** detects intruders using a fiber-optic sensor that is deployed on the perimeter. For fence-protected perimeters, the sensing fiber is installed on the fence inside specially designed UV-resistant polyethylene conduit. The sensing fiber can be deployed on a variety of barriers including chain link, decorative metal fences, and cement walls. The fiber-

optic processor launches a coherent laser light down a specially designed fiber-optic sensor cable. The return light is then analyzed for disturbances caused by potential intruders who create vibrations on the protected perimeter. When the **FD504/FD508** detects intruders, it annunciates the alarm through relay contacts or an IP interface.

The **FD508** monitors up to eight different sensing fiber zones, and the **FD504** is a four-zone model.   Each sensing fiber can be up to 800 meters (2,624 feet) in length for maximum perimeter protection.
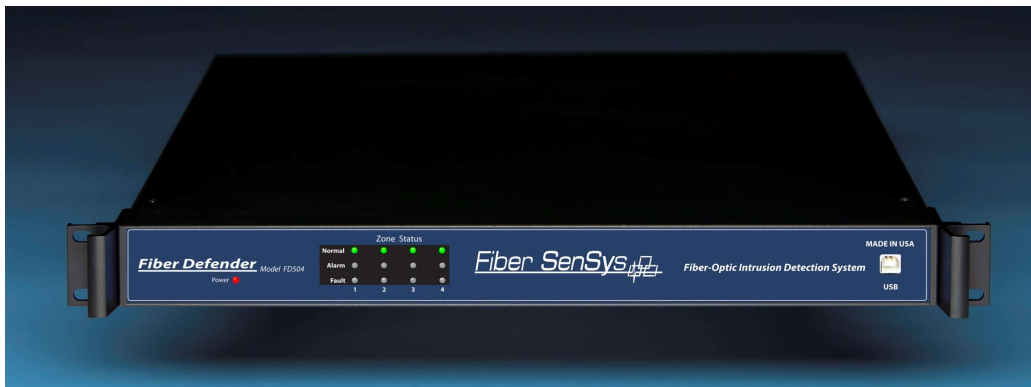
Features	Applications
Remote APU deployment with insensitive lead-in cable capability	Electrical Substations
Nuisance alarm discrimination with built-in tuning software	Oil and Gas Facilities
Integration capability with head end / annunciator panels	Nuclear Power Plants
Immune to EMI, RFI, and lightning	Solar Power Generation Facilities
Environmental noise compensation	Military and Government Facilities
Linear, uniform sensitivity	Commercial Installations

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[16.73]
424.9

[16.50]
419.1

[.81]
20.4

[1.25]
31.8

[18.31]
465.1

[18.95]
481.3

[1.72]
43.7

ZONE STATUS LEDS

DETAIL A
SCALE 1 : 1

Zone Status

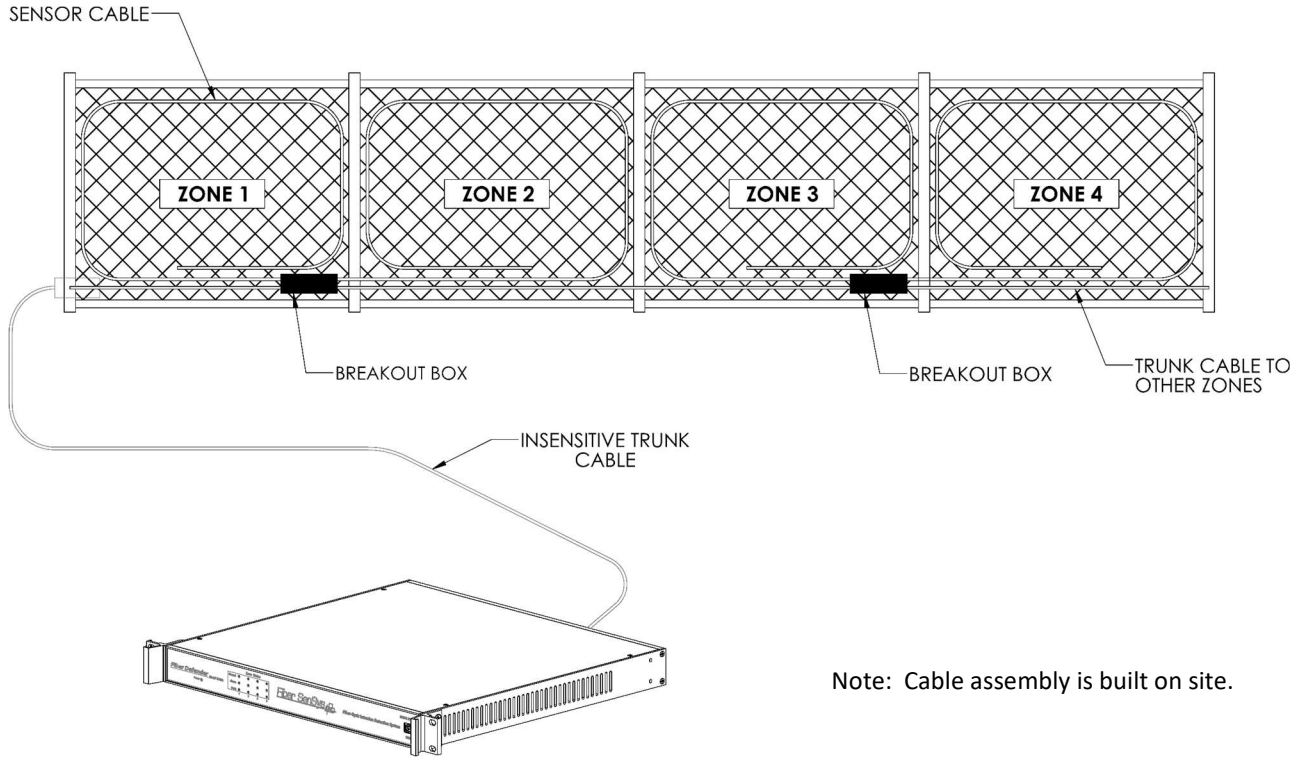|				
Normal	○	○	○	○
Alarm	○	○	○	○
Fault	○	○	○	○
	1	2	3	4

Notes:
1. Allow 4 inches / 102mm minimum free space behind unit for cabling and removal of relay module plugs
2. Dimensions shown as [inches]/mm.

The **FD504/FD508** Alarm Processing Unit (APU) is compatible with all industry-leading head end systems.
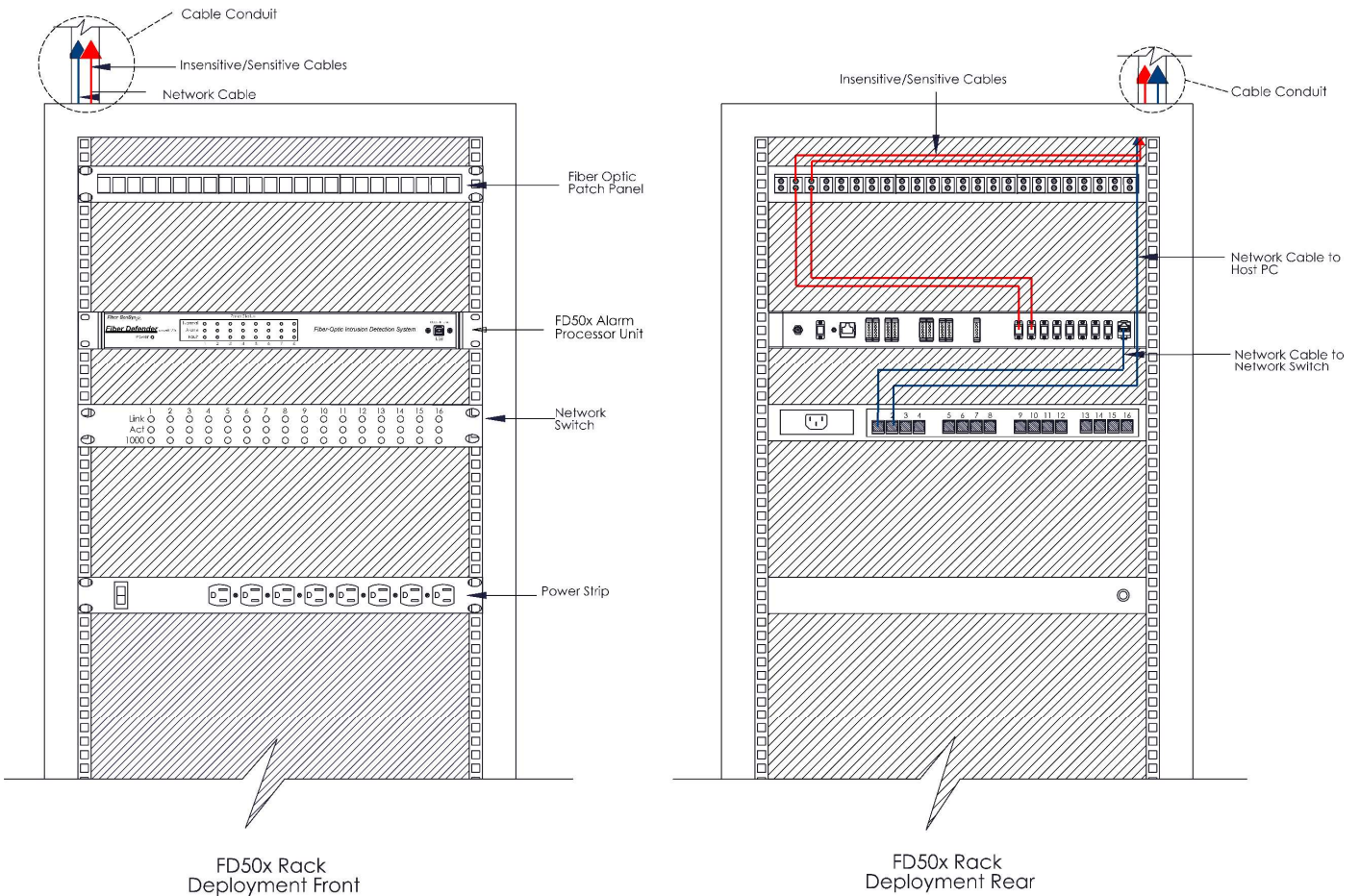
For specific design and applications of the **FD504** and **FD508**, please refer to application notes, available on the Fiber SenSys website or contact your territory representative.

Application Diagram

SENSOR CABLE

ZONE 1   ZONE 2   ZONE 3   ZONE 4

BREAKOUT BOX

BREAKOUT BOX

TRUNK CABLE TO OTHER ZONES

INSENSITIVE TRUNK CABLE

Note: Cable assembly is built on site.

Rack Assembly Diagram

Cable Conduit

Insensitive/Sensitive Cables

Network Cable

Fiber Optic Patch Panel

FD50x Alarm Processor Unit

Network Switch

Power Strip

FD50x Rack Deployment Front

Insensitive/Sensitive Cables

Cable Conduit

Network Cable to Host PC

Network Cable to Network Switch

FD50x Rack Deployment Rear

Product Specifications

Application	Perimeter Fence
Sensor configuration	Fully independent zones, installed with a multi-fiber trunk cable and breakout boxes (assembled in the field)
Number of zones	FD504: Up to four (4) fully independent zones FD508: Up to eight (8) fully independent zones
Sensing fiber	Multimode fiber, custom manufactured to FSI specifications
Insensitive lead-in fiber	Single-mode fiber
Sensing Cable / Zone lengths [1]	• For each zone, sensing fiber + insensitive lead-in cable ≤ 5.8 km • Sensing fiber length ≤ 800 meters
Trunk cable	Outdoor-rated cable containing (minimum) one single-mode insensitive lead-in fiber for each zone
APU power requirements	12 -24 VDC input 19 watts power consumption (maximum)
Standard, external power supply	12 volt external power supply Maximum power output: 24 watts
Front-panel display	LED indicators for normal, fault, and alarm conditions for each zone
Communications	• USB serial port for tuning and for assigning zones to optical ports • TCP/IP port for alarm output and XML communication • Individual dry contact alarm and fault relays for each zone
Relay contact ratings Alarm relay default ACC bus fault relay default Individual Zone Fault Relays Dry contact resistance	100 mA @ 24 V Normally open, or normally closed Normally closed Normally closed 7 Ω typical, 17 Ω max (Form A) 5 Ω typical, 17 Ω max (Form B)
Dimensions	Height: 4.5 cm (1.77 inch) - 1U Width: 42.5 cm (16.75 inch) Depth: 40.6 cm (16 inch); compatible with standard 19" rack
Operating temperature range Operating humidity range	0˚C to 55˚C 0 to 95% non-condensing
Regulatory Compliance	CE, FCC Part 15, RoHS

[1] Sensing fiber is available pre-installed into conduit (FSI product SC3-C) for directly attaching to the fence using stainless steel wire ties. The maximum length of pre-installed sensing fiber in conduit available is 800 meters.

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High Performance – High Reliability – High Security