

Distributed Temperature Sensor (DTS)

FRONT VIEW



REAR VIEW



Patol Fire Detection Systems provide reliable and intelligent fire detection and asset monitoring on projects throughout the world

Our fibre-optic systems have been delivering added value through highly reliable fire detection and lead the way in monitoring temperature and detecting incipient fires within a range of multidiscipline environments with over 1000 devices installed and over one million days of operation

The fibre-optic technology utilised within Patol FibreSense Distributed Temperature sensing (DTS) systems combines the benefits of detection and speed, reliability and versatility in one proven solution. The unique feature of fibre-optic DTS technology is that it can accurately locate hot spots to within a distance of 1m with a temperature accuracy of within $\pm 1^{\circ}\text{C}$. It therefore combines the benefits of Analogue LHD rate of temperature rise with Digital LHD location accuracy

The FibreSense DTS Control Unit connects to FibreSense DTS cable and determines temperature and distance data at thousands of points along the cable which can be up to 10km in length - another benefit of FibreSense DTS. In addition the system is able to monitor the movement of the hot spot, or multiple hot spots, in terms of position and temperature in real-time.

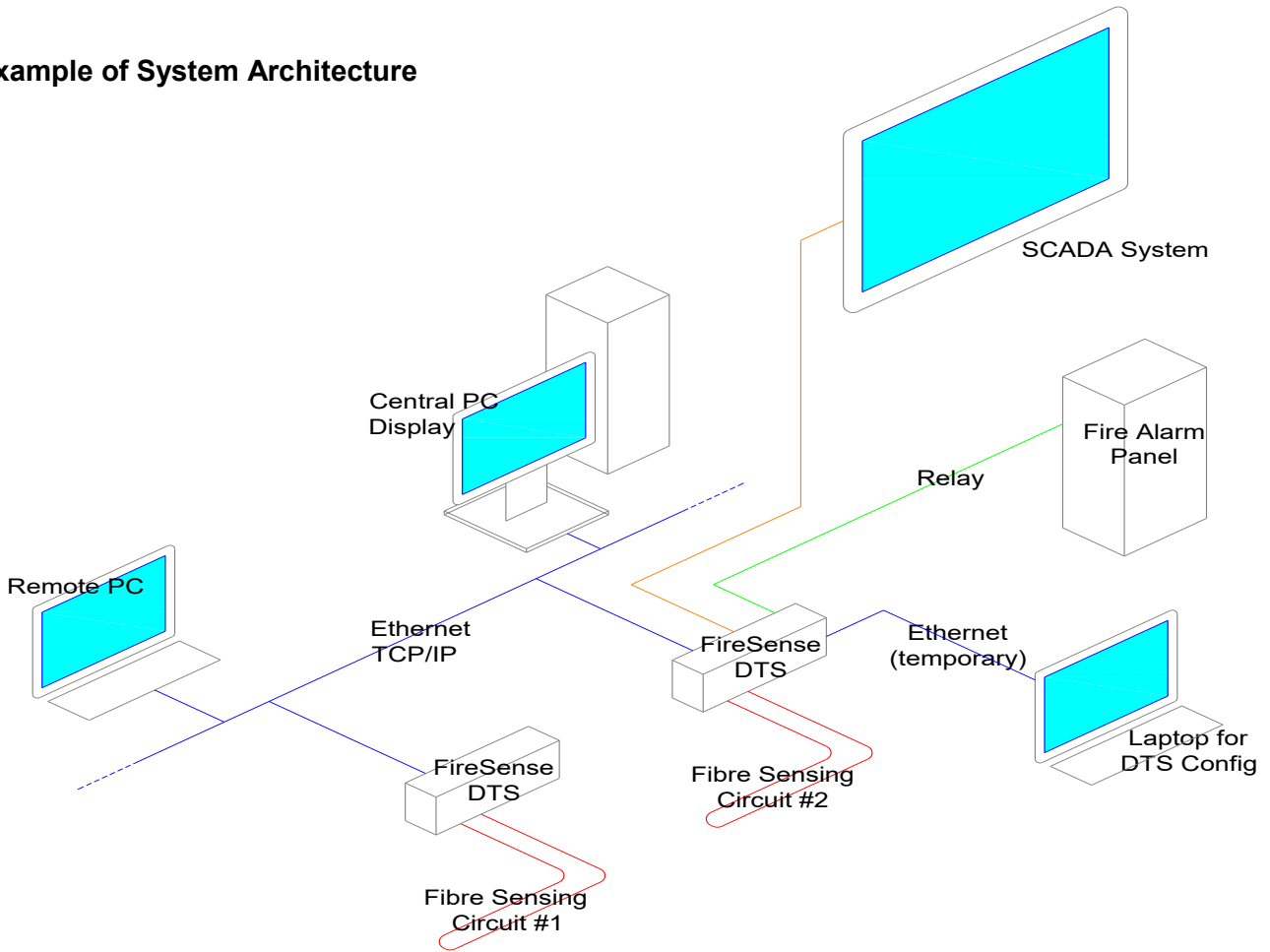
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FibreSense Distributed Temperature Sensing

FireSense Specification			
Range per Channel	2km	5km	10km
Number of Channel	1/2/4	1/2/4	1/2/4
Ordering Part Numbers	DTS-03-02-1CH DTS-03-02-2CH DTS-03-02-4CH	DTS-03-05-1CH DTS-03-05-2CH DTS-03-05-4CH	DTS-03-10-1CH DTS-03-10-2CH DTS-03-10-4CH
Data Acquisition			
Measuring Time	From 1s/Ch, generally~5 for Linear Heat Applications (EN54-22)		
Sampling Interval	0.5 / 1m		
Temperature Resolution*	0.1°C @ 15s, 2.5km	0.3°C @ 15s, 5km	0.3°C @ 15s, 10km
Temperature Accuracy*	±1°C		
Fire Break Alarm	Automatic detection, accuracy within < ± 5m		
Optical			
Laser Wavelength	975nm	975nm	1550nm
Optical Budget**	7dB	9dB	12dB
Connector Type	E2000		
Cable Type	Multimode 62.5 /125 as standard		
Patol Ltd Cable	FibreSense ~#~#~#~		
Laser Safety Classification	Class 1M		
Electrical and Hardware Interfaces			
Supply Voltage	24Vdc (18 to 36Vdc)		
Power Consumption	20W (average)		
Relays	Yes - 50 relays		
Modbus	MODBUS TCP / MODBUS RTU		
RJ45	3 x 100Mbps		
Serial	2 x RS-485		
USB	1 x USB On-The-Go (OTG)		
Other	5.7 - inch touch screen, 640*480 - pixel 262K		
Internal Storage	>500,000 measurements @ 10km, 32GB		
Physical			
Rack Height	3U		
Dimensions (W*H*D)	431 x 131 x 384 mm		
Net Weight	10kg		
IP Rating	IP40		
Material	Painted Steel		
Colour / Finish	Matt Black		
Shipping Dimensions	550 x 330 x 350 mm		
Shipping Weight	15kg		
Environment			
Operating Temperature	-10°C to +50°C (60°C for HT Version)		
Operating Humidity	0 to 95% RH		
Storage Temperature	-10°C to +85°C		
Storage Humidity	0 to 95% Relative Humidity, Non- condensing		
Safety and Compliance			
Laser safety	IEC 60825-1:2007 (second edition)		
CE - ENC	EMC 1014/30/EU-EN 61000-6-3:2007+A1:2011, EN 61000-3-2:2014, EN 61000-3-3:2013 EN 61000-6-1:2007		
CE - LVD	N/A		
CE - RoHS	YES		
FDA	FDA Ascension number 1821008-000 (FireSense 2km and 5km) 1920930-000 FireSense 10km		
FCC	47CFR part 15:2017, ANSI C63.4:2014		
Other	Explosion-Proof mark: Ex isIICT6 ga, EN54 part 22, SIL 2		
Software			
Software Name	DTSCM2		
Alarm types	Max and Min Rate of Rise Deviation		
Max. Zones	1000		

Example of System Architecture



Tunnel configuration Example

