



Industrial Sensing and Control

Product Selection Guide

OPTEK Technology BI Technologies Roxspur Measurement & Control



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Model Numbers and specifications contained within this brochure were verified by technical personnel at the time of printing and should be used for reference purposes only. These reference Model Numbers are not intended to be used for systems design or sensor sizing. In the interests of continuous product improvement, TT Electronics' product specifications are subject to change without notice. For assistance with sensor selection, please contact a TT Electronics applications engineer, or your nearest authorized sales representative. All products shown are RoHS compliant unless otherwise noted.

WARRANTY: Seller warrants that the Products sold to Buyer hereunder will be free from defects in material and workmanship furnished by Seller and will conform, within normal commercial tolerances, to applicable Model #. This warranty shall apply only when Buyer has given Seller written notice of such defect or nonconformity within ninety (90) days after delivery of the Products by Seller and the warranty does not extend to any Product which has been subjected to abuse, misuse, neglect or accident, nor to any Product which has been repaired or altered by other than Seller. THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, AS TO MERCHANT ABILITY, FITNESS FOR A PARTICULAR PURPOSE, DESCRIPTION, QUALITY, PRODUCTIVENESS, OR OTHERWISE.

About TT Electronics

TT Electronics is a global provider of engineered electronics for performance critical applications.

We harness our leading expertise to engineer electronics that put our customers ahead.



TT Electronics has years of experience and expertise in engineering and delivering electronics for applications in the harshest environments across industrial, transportation, aerospace, defence and medical markets.

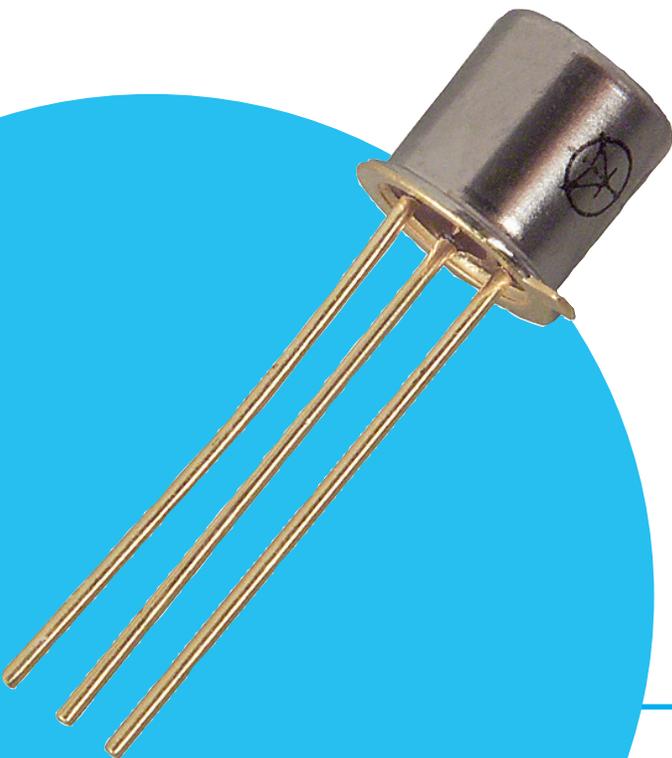
We work hard to develop strong long-term relationships with our customers, many of which are global leaders, working on cutting-edge innovation in some of the fastest growing markets in the global economy. We are proud to be able to say that our customers regularly seek us out as technology partners because they value us most for our:

- Expertise to provide electronics products and solutions that perform to the highest standards
- Personalised and responsive service, which because of our global presence we can deliver wherever they are in the world.

We love the challenges that our customers bring us and we work hard to develop solutions that work best for them.

Industrial Sensing and Control

- Formed in January 2015, the TT Electronics Industrial Sensing and Control division is an amalgamation of our BI Technologies, OPTEK Technology, and Roxspur Measurement & Control brands.
- We provide reliable standard and custom sensing solutions for industrial, aerospace and defence, oil and gas, process manufacturing, medical equipment, and off-road transportation sectors.
- We offer a diverse product portfolio, comprised of multiple core sensing technologies which address a broad range of measurement requirements, including position, temperature, pressure, flow, level and fluid quality, as well as calibration services.
- We have the full in-house capabilities to offer custom solutions with competitive lead times.
- We have earned a strong industry reputation as a trusted partner for industry leading OEMs, often times providing complex custom solutions for the most challenging applications.
- We have a dedicated global sales and engineering team that is entirely focused on delivering sustainable growth for TT Electronics and its customers.
- We seek to become a valued strategic partner to our end customers, helping them to anticipate present and future market needs.
- We offer field-proven, high-reliability designs that are rarely made obsolete, allowing our customers to warranty and service their own finished product designs with confidence.



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Measurement Solutions

Position and Torque



- Contact and non-contacting position and torque sensors; fibre optics; magnetics; optocouplers, rotary encoders
- Optical encoder switches; infrared emitting diodes; photodiodes; LED/sensor pairs; transmissive switches

Pressure



- Ceramic sensors and submersible transducers; pressure transmitters; flush mount pressure transducers; abrasive media sensors

Flow



- Glass and plastic VA; metal VA and ultrasonic flowmeters; control valves; sensor transmitters; dataloggers and controllers

Temperature



- Thermocouples, refractory sheaths and cables, transmitters; thermal imaging; infrared thermometers; multi-spot thermometers; averaging thermometers

Calibration Services



- Onsite or in-house UKAS accredited calibration and certification under BS/EN ISO17025 accredited procedures

Markets we serve

Continuous investments in R&D and the very latest in manufacturing equipment ensure that TT Electronics' industrial sensing and control products keep pace with evolving customer needs.

Oil and Gas



- Exploration
- Distribution
- Refining

Continuous Process



- Continuous flow manufacturing of chemicals, synthetic fibres, papers, metals and glass

Utilities



- Power generation, transmission and distribution
- Water and wastewater treatment
- Irrigation systems

Aerospace and Defence



- Aircraft and satellite
- Defence electronics
- Unmanned aerial vehicles
- Cockpit controls

Discrete Manufacturing



- Production of factory automation machinery and supporting equipment for pumping, heating, fluid handling, and refrigeration

Medical Equipment



- Medical diagnostics
- Portable patient care equipment
- Drug therapy dispensers
- Blood analysers

Offroad Vehicles



- Materials handling
- Agricultural
- Construction
- Recreational (ATVs)

Industrial Printing



- High-end industrial printing on paper and plastic
- 3D printing

Banking and Security



- Automated teller machines
- Safety equipment
- Identification equipment

Discretes

The vast portfolio of discrete components offered by TT Electronics includes a full line of infrared emitting diodes, in a choice of either hermetic or plastic, reflective object sensors, silicon phototransistors and Photodarlington, optically coupled isolators, high-voltage isolators, slotted optical switches, and hallogic hall effect sensors.

Hermetic Infrared Emitting Diodes



Model Number	OP132	OP133W	OP232	OP232W	OP233	OP233W	OP234W
Package	TO-46 Dome Lens	TO-46 Flat Window	TO-46 Dome Lens	TO-46 Flat Window	TO-46 Dome Lens	TO-46 Flat Window	TO-46 Flat Window
LED Wavelength (nm)	935	935	890	890	890	890	890
Output Power (mW/cm ²) Min/Max	4.0/N/A	5.0/N/A	2.0/6.0	3.5/7.0	3.0/N/A	5.0/N/A	5.0/N/A
I _f (mA) Typ/Max	50/100	20/100	50/100	20/100	50/100	20/100	20/100
Beam Angle (Degrees)	18	50	18	50	18	50	50
Lead Length	0.5"	0.5"	0.50"	0.50"	0.50"	0.50"	0.50"

Hermetic Infrared Emitting Diodes



Model Number	OP224
Package	Dome Lens
LED Wavelength (nm)	890
Input Radiance E _e (mW/cm ²)	3.5
I _f (mA) Typ/Max	50/100
Viewing Angle (Degrees)	24

Plastic Infrared Emitting Diodes



Model Number	OP140A	OP166A	OP240A	OP240B	OP245A	OP245B
Package	Sidelooker 0.060" Base	T-1 0.100" Lead Spacing	Sidelooker 0.060" Base	Sidelooker 0.060" Base	Sidelooker 0.100" Base	Sidelooker 0.100" Base
LED Wavelength (nm)	935	935	890	890	890	890
Output Power (mW/cm ²) Min/Max	0.40/N/A	1.95/N/A	0.60/N/A	0.40/1.20	0.60/N/A	0.40/1.20
I _f (mA) Typ/Max	20/50	20/50	20/50	20/50	20/50	20/50
Beam Angle (Degrees)	40	18	40	40	40	40
Lead Length	0.50"	0.50"	0.50"	0.50"	0.50"	0.50"

Plastic Infrared Emitting Diodes



Model Number	OP265FAB	OP266W	OP291A	OP295A	OP298A
Package	T-1	T-1 Flat 0.100" Lead Spacing	T-1 3/4	T-1 3/4	Plastic TO-18
LED Wavelength (nm)	850	890	890	890	890
Output Power (mW/cm ²) Min/Max	7.5/12.5	1.00/N/A	16.0/N/A	44.0/N/A	3.0/N/A
I _F (mA) Typ/Max	20/50	20/50	50/100	100/1,500 Pulsed	50/100
Beam Angle (Degrees)	18	90	50	50	60
Lead Length	0.50"	0.50"	0.69"	0.69"	0.50"

Reflective Object Sensors



Model Number	OPB608A	OPB608B	OPB608V	OPB710F	OPB730	OPB730F
Package	Mini-Cube Reflective	Mini-Cube Reflective	Mini-Cube Reflective	O-46 Reflective	TO-46 Reflective	TO-46 Reflective
Wavelength (nm) (Typ)	890	890	850	935	935	935
Sensor Type	Rbe Transistor	Rbe Transistor	Rbe Transistor	Transistor	Darlington	Darlington
Reflection Distance Inch (mm)	0.050" (1.27 mm)	0.050" (1.27 mm)	0.050" (1.27 mm)	0.250" (6.35 mm)	0.250" (6.35 mm)	0.250" (6.35 mm)
I _{C(ON)} (mA) Min	2	1	5	0.15	1.00	1
I _F (mA) Typ/Max	20/50	20/50	7/12	20/50	20/50	20/50
V _{CE} (V) Typ/Max	30	30	30	30	15	15
Lead Length/Spacing	0.18"/0.24"	0.18"/0.24"	0.18"/0.24"	0.50"	0.50" DIA	0.50" DIA

Infrared Selected NPN Silicon Phototransistors



Model Number	OP505A	OP506A	OP506B	OP550A
Package	T-1	T-1	T-1	Sidelooker
Light Current I _{C(ON)} (mA) Min/Max	4.30/N/A	4.30/N/A	2.15/5.95	2.55/N/A
V _{CE} (V) Max	30	30	30	30
Input Power E _E (mW/cm ²)	1.00	1.00	1.00	1.00
Viewing Angle (Degrees)	25	25	25	60
Lead Length/Spacing	0.5"/0.050"	0.5"/0.100"	0.5"/0.100"	0.5"/0.100"

NPN Plastic Silicon Phototransistors



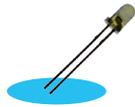
Model Number	OP593A
Package	Plastic TO-18
Light Current I _{C(ON)} (mA) Min/Max	3.00/N/A
V _{CE} (V) Max	30
Input Power E _E (mW/cm ²)	1.70
Viewing Angle (Degrees)	130
Lead Length	0.75"

NPN Silicon Phototransistors



Model Number	OP800A	OP802WSL	OP803SL	OP805SL
Package	TO-18/46 Dome Lens	TO-46 Flat Window	TO-18/46 Dome Lens	TO-18/46 Dome Lens
Light Current $I_{C(ON)}$ (mA) Min/Max	3.60/N/A	2.5/N/A	4.00/8.00	15.00/N/A
V_{CE} (V) Max	30	30	30	30
Input Power E_E (mW/cm ²)	0.5	5.00	5.00	5.00
Viewing Angle (Degrees)	25	75	25	25
Lead Length	0.5"	0.5"	0.50"	0.50"

NPN Silicon Photodarlington



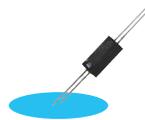
Model Number	OP535B
Package	T-1 0.050" Lead Spacing
Light Current $I_{C(ON)}$ (mA) Min/Max	3.5/32.0
V_{CE} (V) (Max)	2.0/15.0
Input Power E_E (mW/cm ²)	0.13
Viewing Angle (Degrees)	25
Lead Length	0.5"

Optically Coupled Isolators



Model Number	OPI120
Package	Axial Channel
LED Wavelength (nm)	890
Sensor Type	Transistor
CTR (Min/Max)	20
Isolation Voltage	15 kV
I_F (mA) Typ/Max	10/50
V_{CE} (V) (Max)	25
Lead Length/Spacing	0.40"/0.75"

Optically Coupled Isolators



Model Number	OPI110C	OPI1150	OPI1264A	OPI1264B	OPI1264C
Package	Axial-Cylindrical	Axial-Cylindrical	Axial-Cylindrical	Axial-Cylindrical	Axial-Cylindrical
Wavelength (nm) (Typ)	890	890	890	890	890
Sensor Type	Transistor	Transistor	Transistor	Transistor	Transistor
CTR (Min/Max)	100/N/A	10	25/N/A	50/125	100/N/A
Isolation Voltage	10 kV	50 kV	10 kV	10 kV	10 kV
I_F (mA) Typ/Max	10/40	16/50	10/40	10/40	10/40
V_{CE} (V) (Max)	30	5/30	30	30	30
Lead Length/Spacing	0.50"/0.55"	0.40"/3.16"	0.50"/0.55"	0.50"/0.55"	0.50"/0.55"