BALLUFF

sensors worldwide

SMART*LIGHT*

The future of stack light and process visualization

Multi-purpose Tower Light

SmartLight is the first programmable LED signal tower light. With a rich color spectrum, adjustable light intensity and the ability to program individual configurable segments, the Balluff SmartLight can display numerous machine or process status information – instantaneously. The mode of operation can be switched based on programmed conditions so that the single SmartLight can be used as a multi-function tower indicator.

Stack Light Mode

- ■ 1- 5 segments
- ■ Programmable customizable colors for each segment
- ■ Blinking mode with programmable frequency

Level Mode

- ■ Individual LEDs light up to display level
- ■ Level input mapped directly to SmartLight
- ■ Programmable customizable colors for level indication

Run Light Mode

- ■ Complete module displays the running light effect
- ■ Programmable colors of running segment and background
- ■ Programmable speed for running segment

Flexible, Scalable, Intelligent Stack Light!

The SmartLight offers three programmable modes of functionality: segment or stack light, level indication, and run light mode. Additionally, a SmartLight with a buzzer option is available for audible feedback.

SmartLight's segment or stack light mode is feature-rich compared to a standard stack light. The number of segments and color for each segment can be programmed and changed on demand. Individual segments can be set for blinking or flashing mode, and the frequency of blinking can be programmed as well.

When using the SmartLight as a level indicator, the resolution of input level can be mapped from an 8-bit to a 16 bit integer number.

The input could be a position of an object on a linear track or liquid level in a tank. Colors of the LEDs can be changed to signify the importance of the level as well. For example, if the level or the pressure in the tank is closer to the extreme, the SmartLight will display in red.

SmartLight, in a run light mode, allows using different programmable colors for the background and for the running segment. The length of the running segment and the speed of the running mode is configurable and can be switched to express different conditions. As with any other mode, the intensity or brightness can be configured to ensure noticeable performance.

SMART*LIGHT* Advantages

Process monitoring and machine status is an integral part of manufacturing operations. Instantaneous visual feedback enables plants to operate efficiently. SmartLight adds tremendous value to the plant floor as it combines multiple modes of operations and functions in a single programmable tower light. With the SmartLight there are unlimited possibilities!

Simplified Use
■ Standard M12 sensor cable connection reduces need for special spare parts
■ Mount exactly where needed with wall, ceiling, or pole mounting options
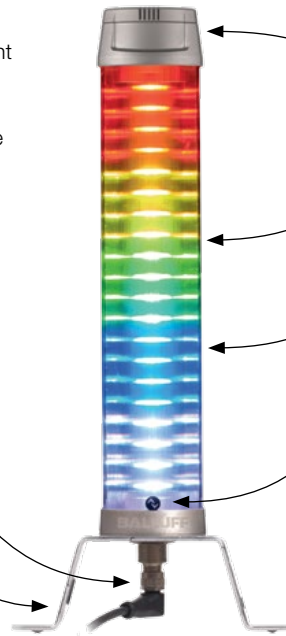
Assures Desired Attention
■ Audible 95db sound module
■ Programmable intensity and customizable bright colors

Maintenance Friendly Design
■ Maintenance-free, very long work life with LED segments to power the lights
■ Built-in diagnostics with IO-Link

SmartLight Architecture

5 Zone

M12

Up to 20 m
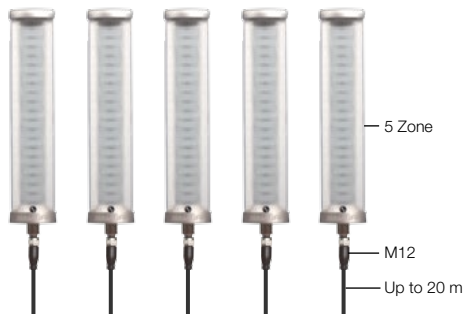
IO-Link Master

For more information visit: www.IO-Link.com
See more options on page 6.

EtherNet/IP
DeviceNet
PROFINET®
PROFIBUS®
CC-Link IE
CC-Link
EtherCAT®

Your Industrial Network

Reduce Complexity

Reduce Complexity → Reduce Risk
■ Single part number, tamper resistant design
■ Programmable colors, intensity, and blinking
■ Configurable modes of operation with on-demand change of mode
■ Standard M12 sensor cable – no complex wiring
■ Programmable buzzer for continuous chopped or beeping sounds

Reduce Complexity →
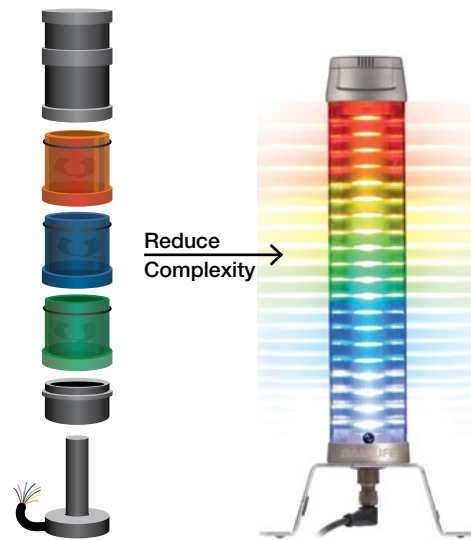
Generic Stack Light   **Balluff LED SmartLight**

IO-Link Distributed Modular I/O

IO-Link is a fieldbus and manufacturer independent communications standard defined by the International Communications Standard IEC 61131-9. IO-Link enables seamless integration of a variety of actuators while maintaining scalability for future adaptability in the controls architecture. IO-Link is universal and adaptable to any major industrial network protocol, such as EtherNet/IP, PROFINET, EtherCAT, CC-Link IE, DeviceNet, PROFIBUS, or CC-Link.
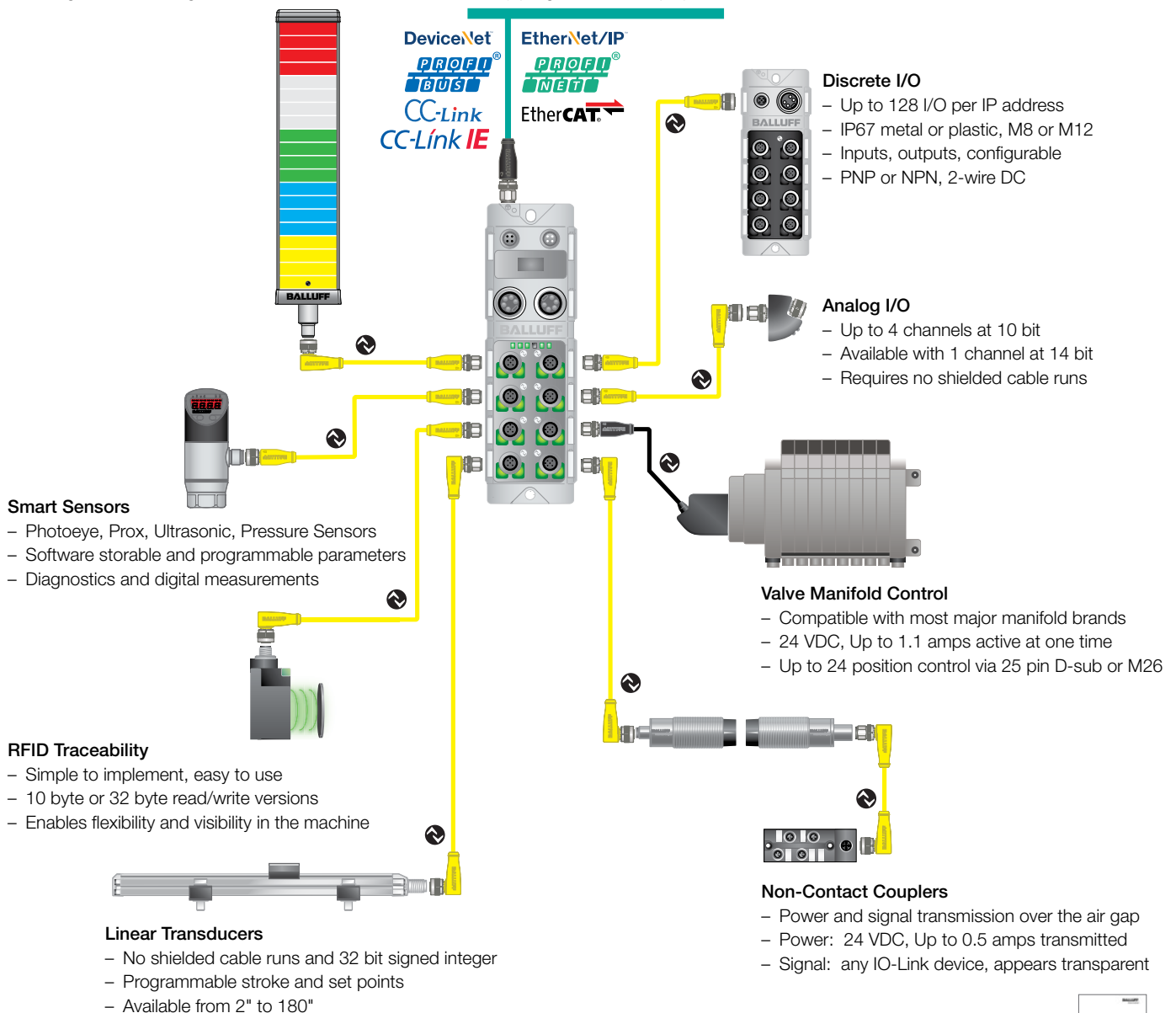
A multitude of actuators or devices can be connected without complex wiring. Devices include discrete I/O (e.g., prox switches), analog I/O devices, smart sensors (e.g., pressure sensor, linear position sensors), and specialty devices (e.g., RFID, non-contact connections) IO-Link has built in scalability to add more devices to the existing network without adding more network nodes in the architecture – thus providing ease of operation and a cost-effective solution for automation.

SmartLight
– Stack Light Mode: 1-5 zones
– Level Mode: high/low level
– Configure: colors, brightness, levels, etc.

IO-Link Masters
– 4 port and 8 port versions
– Parameter server functionality
– Fully programmable display

Discrete I/O
– Up to 128 I/O per IP address
– IP67 metal or plastic, M8 or M12
– Inputs, outputs, configurable
– PNP or NPN, 2-wire DC

Analog I/O
– Up to 4 channels at 10 bit
– Available with 1 channel at 14 bit
– Requires no shielded cable runs

Smart Sensors
– Photoeye, Prox, Ultrasonic, Pressure Sensors
– Software storable and programmable parameters
– Diagnostics and digital measurements

Valve Manifold Control
– Compatible with most major manifold brands
– 24 VDC, Up to 1.1 amps active at one time
– Up to 24 position control via 25 pin D-sub or M26

RFID Traceability
– Simple to implement, easy to use
– 10 byte or 32 byte read/write versions
– Enables flexibility and visibility in the machine

Linear Transducers
– No shielded cable runs and 32 bit signed integer
– Programmable stroke and set points
– Available from 2" to 180"

Non-Contact Couplers
– Power and signal transmission over the air gap
– Power: 24 VDC, Up to 0.5 amps transmitted
– Signal: any IO-Link device, appears transparent

For full product offering, download the latest catalog at www.balluff.us

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SMART*LIGHT* – LED Signal Tower Light with IO-Link
For signaling operating states

IO-Link

| Model	5-segment with buzzer	5-segment without buzzer	3-segment with buzzer	3-segment without buzzer	1-segment with buzzer	1-segment without buzzer
	BNI0085	**BNI0082**	**BNI008A**	**BNI0088**	**BNI0087**	**BNI007T**
Stack light mode	■	■	■	■	■	■
Run light mode	■	■	■	■	■	■
Level mode	■	■	■	■		
Sound module (buzzer)	Yes	No	Yes	No	Yes	No
Volume	95dB/1 m		95dB/1 m		95dB/1 m	
Audio frequencies	1Hz, 5Hz, Continuous tone, pulse		1Hz, 5Hz, Continuous tone, pulse		1Hz, 5Hz, Continuous tone, pulse	
Dimension (LxWxH) mm	60x60x330.5	60x60x309	60x60x234.5	60x60x213	60x60x138.5	60x60x117
Segments (Min-Max)	1-5	1-5	1-3	1-3	1	1
Supply voltage U_s	18...30V DC	18...30V DC	18...30V DC	18...30V DC	18...30V DC	18...30V DC
Max. load current	0.5 A	0.5 A	0.25 A	0.25 A	0.25 A	0.25 A
Communication	IO-Link	IO-Link	IO-Link	IO-Link	IO-Link	IO-Link
Connector	M12, A-coded, male	M12, A-coded, male	M12, A-coded, male	M12, A-coded, male	M12, A-coded, male	M12, A-coded, male
Configurable	Yes	Yes	Yes	Yes	Yes	Yes
Function indicator IO-Link run	Green LED	Green LED	Green LED	Green LED	Green LED	Green LED
Power indicator	Green LED	Green LED	Green LED	Green LED	Green LED	Green LED
Mounting	M18 thread	M18 thread	M18 thread	M18 thread	M18 thread	M18 thread
Operating temperature	–5...+55 °C	–5...+55 °C	–5...+55 °C	–5...+55 °C	–5...+55 °C	–5...+55 °C
Storage temperature	–25...+70 °C	–25...+70 °C	–25...+70 °C	–25...+70 °C	–25...+70 °C	–25...+70 °C
Degree of protection per IEC60529	IP 30	IP 65	IP 30	IP 65	IP 30	IP 65
Housing material	Transparent plastic	Transparent plastic	Transparent plastic	Transparent plastic	Transparent plastic	Transparent plastic
IO-Link Version 1.1						
Transfer rate	COM 2 (38.4 kBaud)					
Cycle time	7.2 ms with IO-Link 1.1 Master					
IO-Link process data length	8-byte output, 1-byte input					
Communication indicators	Green LED					

IO-Link Masters

Balluff offers IO-Link master blocks for all major networks and fieldbus protocols. With built-in expandability, IO-Link blocks can significantly increase the I/O count served by a single network node. Each IO-Link port is configurable to be used as either IO-Link or as input or output – providing flexibility for scalable and modular controls architecture.
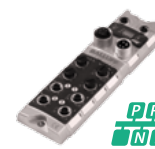
Network Protocol	EtherNet/IP	DeviceNet	PROFINET
Addressing	Display	Display	Display
4 IO-Link / 12 Configurable	BNI004A	BNI005A	BNI004U
8 IO-Link / 8 Configurable	BNI006A		BNI005H
16 IO-Link / 16 Configurable			BNI007M (not shown)

Network Protocol	PROFIBUS	PROFIBUS
Addressing	Display	Rotary Dials
4 IO-Link / 4 Configurable		BNI0030
4 IO-Link / 12 Configurable	BNI005R	

Network Protocol	EtherCAT	CC-Link
Addressing	Display	Display
4 IO-Link / 12 Configurable		BNI0040
8 IO-Link / 8 Configurable	BNI0077	

Accessories & Connectivity

To make the most out of your investment, Balluff offers an optional array of accessories and connectivity solutions perfectly tailored to the SmartLight.

- ■ IO-Link USB converter enables connecting the SmartLight to PC
- ■ Free configuration utility to configure and test the SmartLight as well as other IO-Link devices available from Balluff
- ■ Ease of diagnostics, troubleshooting and configuration off-line

	BNI0073
Aux power	110V AC with converter for sensor actuation
IO-Link	Master
Load Current Max	40mA via USB, 1.6A with external supply
Dimensions	(L) 69.00 mm x (W) 66.00 mm x (H) 29.00 mm

	BAM026L	BAM026K	BAM0255	SET016U	SET011M
Description	Pedestal mounting for SmartLight	Pedestal mounting for SmartLight	Right angle bracket for wall mount	Pole or wall mounting Kit contains: 150 mm rod, knuckle, foot, sensor holder	Pole or wall mounting Kit contains: 2x150 mm rod, knuckle, joint, foot, sensor holder
Material	Aluminum anodized	Aluminum anodized	Aluminum anodized		
Dimensions	H 400 mm x Ø 70mm	H 100 mm x Ø 70mm			
Mounting h/w	M5 screws	M5 screws	M6 screws		

	BCC M415-M414-3A-304-①X44T2-_②_	BCC M425-M414-3A-304-①X44T2-_②_
Description	4-wire, non-LED	4-wire, non-LED
Type	M12 Female - M12 Male	M12 Female - M12 Male
Configuration	Straight - Straight	Right angle - Straight
Voltage rating	250 VAC/VDC	250 VAC/VDC
Amperage	4 A	4 A

	BCC M415-M424-3A-304-①X44T2-_②_	BCC M425-M424-3A-304-①X44T2-_②_
Description	4-wire, non-LED	4-wire, non-LED
Type	M12 Female - M12 Male	M12 Female - M12 Male
Configuration	Straight - Right angle	Right angle - Right angle
Voltage rating	250 VAC/VDC	250 VAC/VDC
Amperage	4 A	4 A

① Standard Cable Jackets: V=PVC, P=PUR, E=TPE
② Standard Lengths Available: 003=0.3 m, 006=0.6 m, 010=1.0 m, 015=1.5 m, 020=2 m, 030=3 m, 050=5 m

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Systems and Services

Industrial Networking and Connectivity

Industrial Identification

Object Detection

Linear Position Sensing and Measurement

Fluid Sensors

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