Wireless I/O

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more sensors, more solutions

Why Wireless?
Cable Replacement
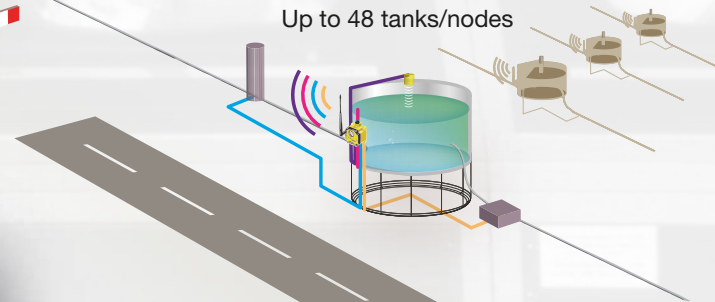# Tank Level Monitoring Example

Standard Cable Installation

Wireless Communication

ADVANTAGES
Compatible with all sensors
Quick and easy installation
Cost effective
Perfect for renovation

Up to 48 tanks/nodes

max ON/OFF
level meter 45 M³
min ON/OFF
pump ON/OFF
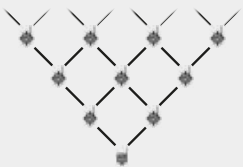valve ON/OFF

Mix of 12 I/O per tank/node
In this case:

- Pump: digital output
- Level meter: analogue input
- Max.-Min. Level: 2x digital inputs
- Valve: digital output

Key Features

Reliable	Secure	Flexible	Industrial
FHSS Communication	Proprietary Protocol	Bidirectional Communication	Multiple Signals Digital and Analogue
MultiHop Repeater Network	Link Loss Output Fall Back Condition	Configurable and Mapped I/O	Robust IP67
Built-in Signal strength for Site Survey	Multiple Network ID	Power Possibilities	Accessories, Antennas and Cables
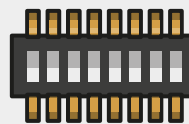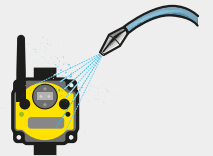
Product Topologies

DX70
Point to Point

- Direct I/O mapping
- Mixed digital and analogue I/O values
- Unlimited pairs in the same location
- 10 to 30 Vdc

Up to 3 km

DX80
Star Topology

- Mapping I/O by software free of charge
- Digital and analogue I/O values for the Node
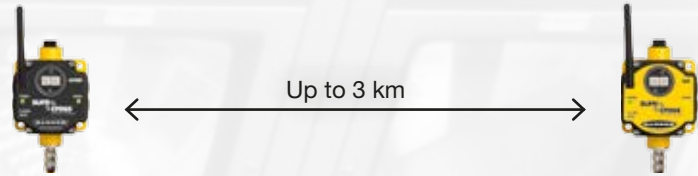- Digital, analogue I/O values and communication (Modbus or Ethernet) for the Gateway
- Up to 48 Nodes per Network/Gateway
- Unlimited networks in the same location
- 10 to 30 Vdc, solar panel or battery option

Up to 3 km   Up to 3 km
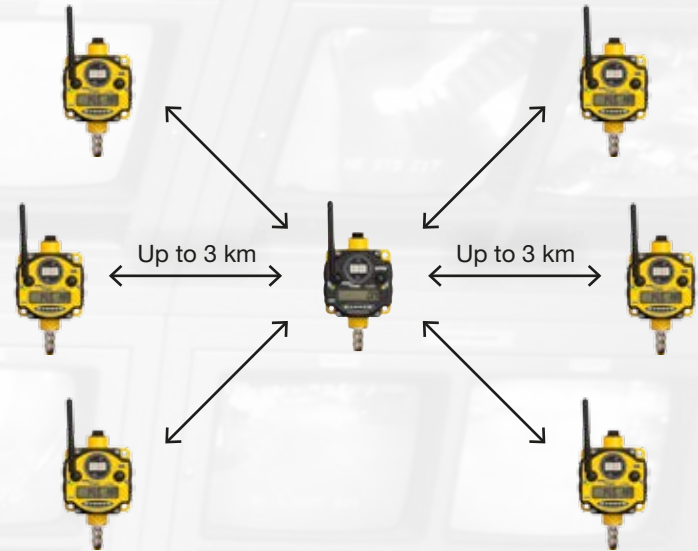
MultiHop Data Radio with I/O
Wireless Repeater Network

No limit, depends on repeaters number
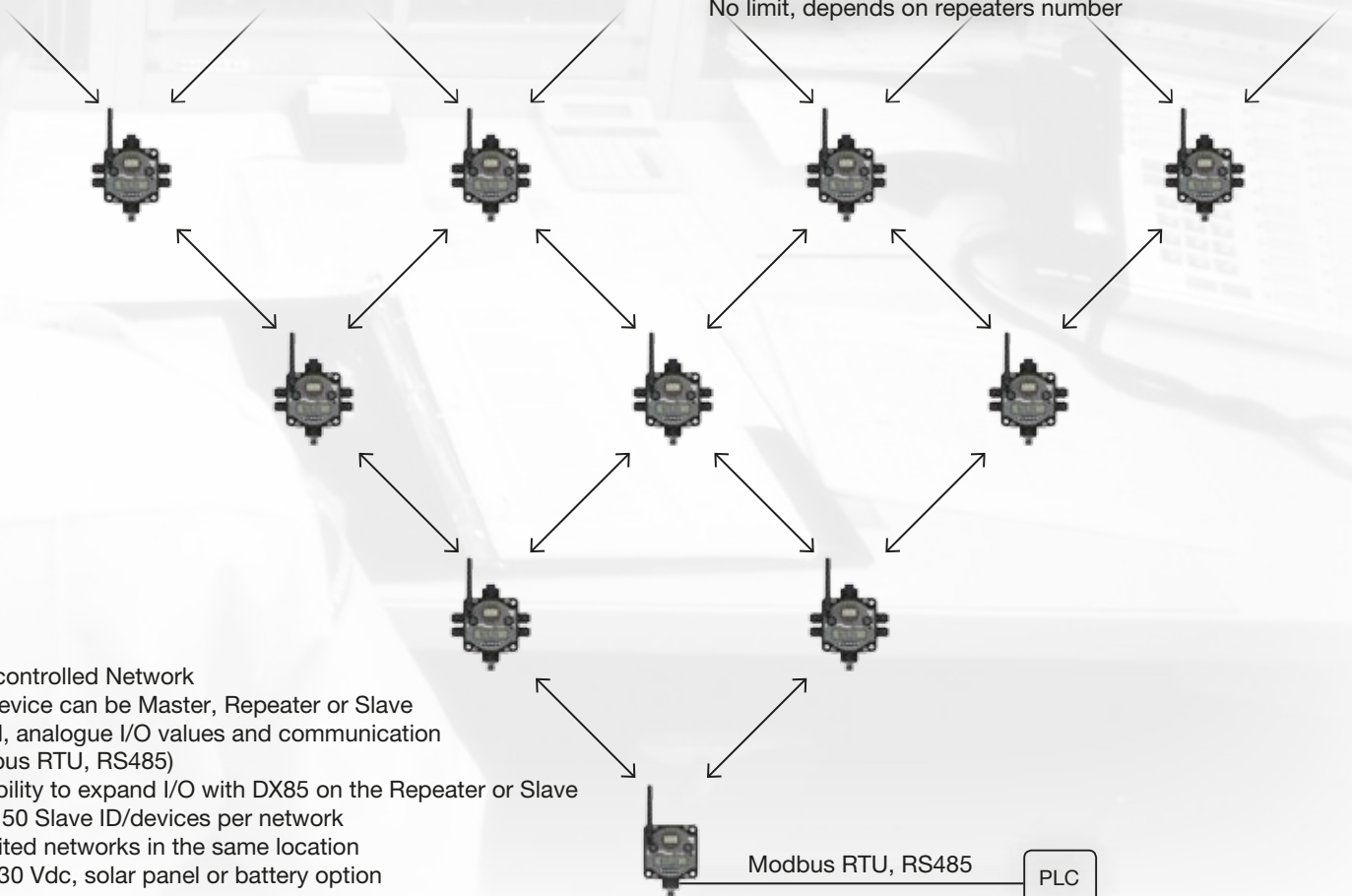
- Host controlled Network
- Any device can be Master, Repeater or Slave
- Digital, analogue I/O values and communication (Modbus RTU, RS485)
- Possibility to expand I/O with DX85 on the Repeater or Slave
- Up to 50 Slave ID/devices per network
- Unlimited networks in the same location
- 10 to 30 Vdc, solar panel or battery option

Modbus RTU, RS485   PLC

DX70
Point to Point

DX70 2,4 GHz Gateways & Nodes Kit, 10 to 30 Vdc						
	Type	Discrete I/O (PNP)		Analogue I/O		
Mixed digital and analogue		IN	OUT	IN	OUT	Type
DX70G2X6S4P4M2M2	Gateway	4	4	2	2	0-20 mA
DX70N2X6S4P4M2M2	Node	4	4	2	2	0-20 mA
Digital only						
DX70G2X6S4P8	Gateway	4	8	/	/	/
DX70N2X6S8P4	Node	8	4	/	/	/

DX80
Star Topology

IP20 External Terminal block
ATEX Zone 2 certification

Internal
Antenna

Other DX80 housings available

DX80 2,4 GHz Gateways with Modbus RTU (RS485) Communication & Nodes						
Gateway Model	Power option	Discrete I/O		Analogue I/O		
		IN	OUT	IN	OUT	Type
DX80G2M6S-P8	10 to 30 Vdc	12 (I+O=12 max) PNP	12 (I+O=12 max) PNP	/	/	/
DX80G2M6S-P2	10 to 30 Vdc	4 (PNP)	4 (PNP)	2	2	0-20 mA or 0-10 VDC
DX80G2M6S0P0M4M4	10 to 30 Vdc	/	/	4	4	0-20 mA
DX80G2M6S0P0V4V4	10 to 30 Vdc	/	/	4	4	0-10 VDC
DX80G2M2S-P	Flexpower	/	/	/	/	/
DX80P2T6S	10 to 30 Vdc	Gateway Pro with Modbus TCP & Ethernet IP Communication (no I/O)				

Node Model	Power Option	Discrete I/O		Analogue I/O		
		IN	OUT	IN	OUT	Type
DX80N2X2S-P7	Flexpower	12 (I+O=12 max) NPN	12 (I+O=12 max) NMOS	/	/	/
DX80N2X6S-P8	10 to 30 Vdc	12 (I+O=12 max) PNP	12 (I+O=12 max) PNP	/	/	/
DX80N2X6S-P2	10 to 30 Vdc	4 (PNP)	4 (PNP)	2	2	4-20 mA or 0-10 VDC
DX80N2X6S0P0M4M4	10 to 30 Vdc	/	/	4	4	0-20 mA
DX80N2X6S0P0V4V4	10 to 30 Vdc	/	/	4	4	0-10 VDC
DX80N2X2S2N2M2	Flexpower	2 (NPN)	2 (NMOS)	2	/	0-20 mA
DX80N2X2S2N2M4	Flexpower	2 (NPN)	2 (NMOS)	4	/	0-20 mA
DX80N2X2S-P3	Flexpower	2 (NPN)	2 (NMOS)	4	/	Thermocouple
DX80N2X2S-P4	Flexpower	/	/	4	/	PT100 (RTD) (3 wires)
DX80N2X2S4A2	Flexpower	2 (NPN-PNP)	2 (NMOS)	2	/	Frequency/counter
DX80N2X1S2A1	Internal Battery	1 (NPN-PNP)	1 (NMOS)	1	/	Frequency/counter
DX80N2X2S2S	Flexpower	2 (NPN)	2 (NMOS)	2	/	Serial Input for Flexpower sensors
DX80N2X1S1S	Internal Battery	1 (NPN)	1 (NMOS)	1	/	Serial Input for Flexpower sensors
DX80N2X2S-CS1	Flexpower Solar Panel	2 (NPN)	2 (NMOS)	2	/	0-20mA, 1 x Thermistor, 1 x Battery status

DX99
Intrinsically Safe Nodes
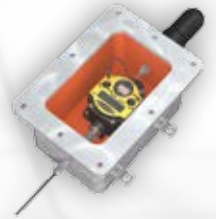
Solutions available for ATEX Zone 1 with 24 Vdc and
Ex d enclosure

DX99 2,4 GHz Nodes for Hazardous Locations, ATEX Zone 0 & 20, compatible with DX80 Gateways out of EX Area				
Model	Discrete IN (2)	Analogue IN	Power (18V boost)	Housing
DX99N2X1S2N0M2X0D2	PNP or NPN	2 x 0-20 mA	Internal Battery	Metal
DX99N2X2S2N0M2X0A2	PNP or NPN	2 x 0-20 mA	DX-81H battery box	Plastic
DX99N2X1S2N0TAX0D0	PNP or NPN	3 x Thermocouple	Internal Battery	Metal
DX99N2X1S2N0TAX0D0	PNP or NPN	3 x Thermocouple	DX-81H battery box	Plastic
DX99N2X1S2N0R4X0D0	PNP or NPN	4 x RTD/PT100	Internal Battery	Metal
DX99N2X2S2N0R4X0A0	PNP or NPN	4 x RTD/PT100	DX-81H battery box	Plastic

DATA RADIO
Data Radio MultiHop with I/O

Data Radio MultiHop 2,4 GHz, each model has RS485 Modbus RTU and can be setup as a Master, Slave or Repeater					
Node Model	Power Option	Discrete I/O		Analogue I/O	
		IN (PNP)	OUT	IN	OUT
DX80DR2M-H	Flexpower	/	/	/	/
DX80DR2M-H2	10 to 30 Vdc	4 (PNP)	4 (PNP)	2 x 0-20mA	2 x 0-20mA
DX80DR2M-H3	Flexpower	2 (NPN-PNP)	2 (NMOS)	4 x Thermocouple, 1 x Thermistor	/
DX80DR2M-H4	Flexpower	/	/	4 x RTD/PT100 3-wire	/
DX80DR2M-H5	Flexpower	4 (PNP-NPN)	2 (NMOS)	4 x 0-20mA	/
DX80DR2M-H12	Flexpower	2 (NPN-PNP)	2 (NMOS)	2 x 0-20mA, 1 x Thermistor, 1 x SDI-12 or Counter and valve	/

Accessories

DX85
Extension I/O

IP20 External Terminal block housing available

DX85 Remote I/O Extension Unit (only for Gateways with Modbus RTU Communication)					
Model	Discrete I/O		Analogue I/O		
	IN (PNP)	OUT (PNP)	IN	OUT	Type
DX85M-P8	12 (I+O=12 max)	12 (I+O=12 max)	/	/	/
DX85M4P4M2M2	4	4	2	2	0-20 mA
DX85M0P0M4M4	/	/	4	4	0-20 mA

DX80
FlexSensors

FlexSensors	
Model	Description
M12FTH1Q	Serial Temp/RH sensor calibrated +/-2%
M12FTH2Q	Serial Temp/RH sensor calibrated +/-3.5%
T30UFDNCQ	T30U serial ultrasonic 3 meter range
QT50U-75390	QT50U low power ultrasonic 8 meter range
QS30WEQ	Low power emitter
QS30WRQ	Low power receiver, 15 meter range
SM312LPQD-76885	Low power mini-beam 3.6 - 5V Retro
SM312DQD-75904	Low power mini-beam 3.6 - 5V Diffuse

Power options

Power Supply, Battery Box, Solar Panel	
Model	Description
PS24DX	24V dc, 200 mA IP67 Power Supply
DX81	1 Battery
DX81P6	6 Batteries
DX81H	1 Battery for DX99 - ATEX
BWA-SOLAR-001	Solar Panel Kit

Antennas	
Model	Description
BWA-2O2-C RP-SMA Male	2 dBi antenna indoor
BWA-2O5-C RP-SMA Male	5 dBi antenna indoor
BWA-2O7-C RP-SMA Male	7 dBi antenna indoor
BWA-2O6-A N Female	6 dBi antenna outdoor
BWA-2O8-A N Female	8,5 dBi antenna outdoor

Surge Suppressors	
Model	Description
BWC-LMRSFRPB	Bulkhead, RP-SMA Type
BWC-LFNMN	N-Type
BWC-LFNBMN	Bulkhead, N-Type

Connectors for DX70 Top & Bottom	
1/2-inch NPT Hub Entrance	
Model	Description
BWA-QD5.5	M12 connector 5-pin
BWA-QD8.5	M12 connector 8-pin
BWA-QD12.5	M12 connector 12-pin
BWA-CG.5-10	Cable Glands (10 pieces)

Cables	
Model	Description
RP-SMA to RP-SMAF Bulkhead (RG58 cable loss: 1,05 dB/m)	
BWC-1MRSFRSB4	4 m cable
BWC-1MRSFRSB2	2 m cable
BWC-1MRSFRSB1	1 m cable
BWC-1MRSFRSB0.2	0,2 m cable
BWA-HW-17	DX99 antenna feedthrough
RP-SMA to N Male (LMR200 cable loss: 0,56 dB/m)	
BWC-1MRSMN05	0,5 m cable
BWC-1MRSMN2	2 m cable
N Male to N Female (LMR400 coaxial, cable loss: 0,22 dB/m)	
BWC-4MNFN6	6 m cable
BWC-4MNFN15	15 m cable
BWC-4MNFN30	30 m cable
BWC-4MNFN3	3 m cable

| Convertor cable for the User	
Configuration Tool	
BWA-HW-006	RS-485 to USB adapter, 1 m for DX80 IP67
MQDMC-401	RS-485 to USB adapter, 0,5 m for DX80 IP20

Configuration tool

The User Configuration Tool uses a USB to RS-485 converter to connect a standard SureCross Gateway to a USB connection on a computer.
Once connected, the User Configuration Tool will define the one to one I/O linking and setup parameters of the wireless system.

Applications by Industry

Factory Automation
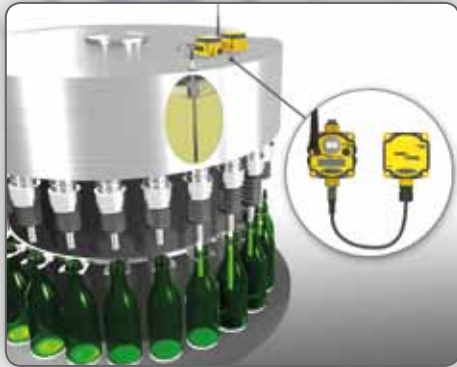
Rotating Filling Machines
Replace slip rings with on-board Wireless monitoring of level, pressure and temperature

Remote Indication
Simplify call for parts and other inventory alarms with a Wireless I/O Network

Robot equipment
Avoid costly shutdowns caused by broken cables via wireless data transfer from a moving robotic arm to the control panel

Process Automation

Tank Level Monitoring
Measure liquid level and activate a pump or open a valve with a Wireless FlexPower Node

Flow Control
Collect Flow Data with intrinsically safe Wireless Nodes that provide battery power to the radio and transmitter (ATEX)

Gas Analysis
Continuous emission monitoring of chimney output variables with a Wireless data network

Building Automation

Storage Control
Control ambient Temperature and Humidity in high value storage areas with a battery-powered Node and integrated sensor
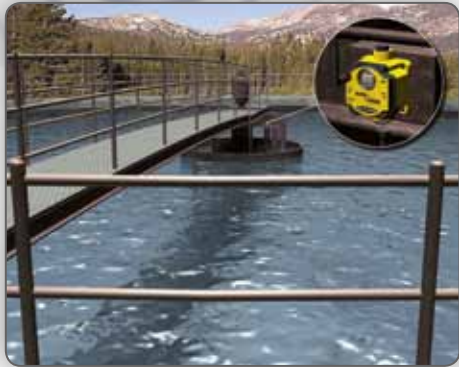

Energy Management
A wireless monitoring system offers facilities a simple solution to increase efficiency by saving energy and conserving plant resources
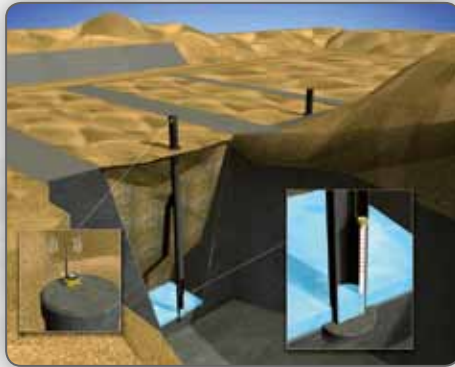

HVAC Management
Control energy costs with a Wireless network that automatically controls HVAC systems based on real-time data

Environmental

Water Treatment
Monitor multiple data points such as pH, conductivity, level and temperature with a single Wireless Node with up to 4 analog inputs

Landfill
Gather leachate levels and monitor pump status with total count of extracted volume using a single Wireless Node optimised for battery-power

Compost
Monitor internal windrow temperature to optimise compost production process with a probe including the Wireless Node and Thermocouples

Agriculture

Greenhouse
Control climate variables in a commercial greenhouse with a Wireless Temp and Humidity Node optimised for battery-power

Irrigation
Control system pressure, solenoid valve activation and counter input on a Wireless Node optimised for battery-power

Soil Moisture
Continuously monitor and control soil moisture with a Wireless Network for gathering data from the field and activating pumps in remote locations

Transportation & Logistics

Cranes
Control position and status, coordination for anti-collision of cranes with a Wireless I/O network

Manage AGV Routing
Use a Wireless Network to schedule AGV routes to improve efficiency and eliminate long wiring runs

Loading Dock Notification
Automatically alert operators that a truck has arrived at a loading dock with a Wireless M-GAGE Node embedded in the ground

Sensors

- Presence/Absence Detection
- Foreground & Background Suppression
- GO/NO GO Inspection
- Gating and Triggering
- Parts Counting
- Level and Distance Measurement
- Positioning
- Contrast and Colour Sensing

Vision

- Vision Sensors with Onboard User Interface
- Pattern Recognition
- Traceability (Barcode, Datamatrix and Text Reading)
- OCR/OCV
- Complex Part Inspection
- Part Orientation
- Assembly Verification
- Colour Inspections

Wireless I/O

- Slip Ring Replacement
- Tank Farm Monitoring
- Livestock Environmental Monitoring
- Water and Wastewater Treatment
- HVAC Remote Monitoring
- Traffic Monitoring & Control
- Remote Sensing in Process Automation
- Cable Replacement
- ATEX Approved Solutions
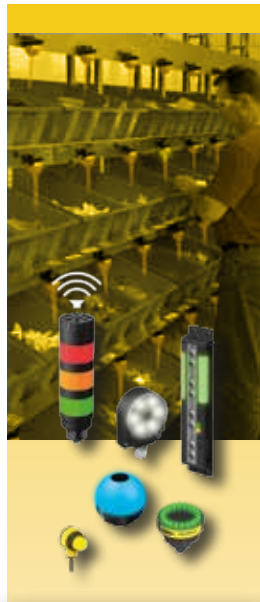
Lighting & Indicators

- Bin & Part Picking
- Error/Mistake Proofing
- Pick-to-Light & Put-to-Light
- Operator Guidance
- Call for Parts
- Incorrect Pick Signal
- Remote Start/Stop Indication
- Work lights and cabinet lighting
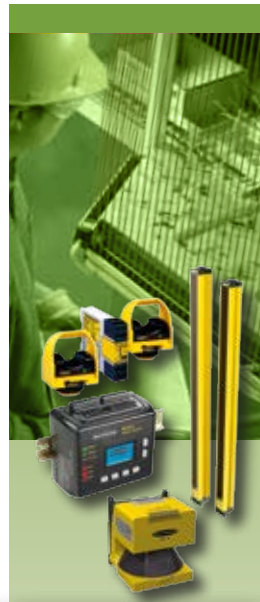
Machine Safety

- Safety Light Screens
- Optical Non-Contact Safety Systems
- Ergonomic Two-hand Control Devices
- Safety Modules
- Emergency Stop Devices
- Safety Interlocking
- Laser Scanners for Safety Applications

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