HF scientific
Water Quality Measurement Systems

AdvantEdge SERIES™

Process Analytical Measurement Systems

2010 Ordering Guide

Optical DO

ORP

pH

Turbidity

Free Chlorine

Contact Conductivity

Dissolved Oxygen

Toroidal Conductivity

Dissolved Ozone

Table of Contents:

AdvantEDGE System Components

As shown below, any AdvantEDGE sensor head plugs into the front end of the Interface Module. Any Communications Adapter plugs into the back end of the Interface Module to form a complete measurement system that can be mounted in process and be wired directly to a PLC, PDA or PC network. Measurement, calibration, configuration and diagnostics can be performed from a computer or from an intermediate LD500 Local Display.

A _typical_ AdvantEDGE System consists of the three components listed below - Communications Adapter, Interface Module and Sensor Head.
See page 18 for a helpful guide to ordering worksheet.

Communications Adapter
A selection of plug and play communication modules provide power and direct interactive communications with control systems and computers. The table below shows the available protocols. If a local display is desired, the LD500 can be used. Multiple sensor assemblies can be used with the LD500.

Interface Module
The heart of the sensor assembly is the Universal Interface Module. It's encapsulated measurement electronics automatically converts sensor signals into calibrated measurement units. It works with a variety of Communication Adapters to operate directly with any computer system.

Sensor Head
Pre-calibrated plug and play sensor heads can be replaced at any time, making AdvantEDGE the most versatile and accurate analytical measurement system on the market. The table below shows the parameters available.

Parameters	Interface	Communications Protocols	Control Room
pH			
ORP		Modbus RTU	
Free Chlorine	Direct	Profibus	SCADA
Turbidity		RS 485 ASCII	PLC
Dissolved Oxygen	Local Display	CANOpen	DCS
Optical Dissolved Oxygen		Device Net	PC
Dissolved Ozone		Ethernet IP	
Conductivity		USB	

Optional LD500
Local Display

Typical AdvantEDGE System Assembly

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Communication Adapter   Interface Module   Sensor Head

AdvantEDGE Interface Module

Model Number
IM500   Interface Module integrates all sensor and communications functions. 1" NPT mounting standard. Sanitary and insertion mounting options available.

Body Material
1   316 Stainless Steel (Abrasion Resistant, Robust)
2   CPVC (Low Cost, All-Purpose)
3   PEEK (Food Grade, Chemically

Mounting Options
1   1-inch NPT threads, front and back (Standard)
CONTACT FACTORY FOR ADDITIONAL MOUNTING OPTIONS

IM		

← Interface Module body part number

Communication Adapter → Interface Module ← Sensor Head

AdvantEDGE Communications Adapter

Model Number
CA   The AdvantEDGE Communications Adapter plugs into any Interface Module for direct connection to PLC, computer or PDA for full-featured measurement, calibration, configuration and diagnostics. It removes the need for an intermediate analyzer electronics box/local display. A Local Display can be used if desired.

Body Material
1   316 Stainless Steel (Abrasion Resistant, Robust)
2   CPVC (Low Cost, All-Purpose)
3   PEEK (Food Grade, Chemically

Communications
2B   Modbus RTU, for LD500, PLC and Modbus networks. Required for Profibus networks.
1A   RS-232 ASCII, for PC communication. AquaComm software included.
2A   Modbus RS-232, for direct PC and PLC applications.
4B   CANopen for PC and PLC networks.
5R   DeviceNet for PLC networks.
7R   Ethernet IP, Modbus TCP and TCP/IP for POE switches.
8R   USB cables for PC and portable applications. AquaComm software included.

Cable Length
1   10 Feet
2   20 Feet
3   30 Feet
X   Where X = Number of Feet/10

Reserved Category

CA				A	
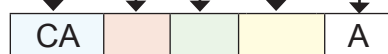
← Communications Adapter part number

General Guide for Communications Adapter Cable Length

Protocol	Max Drop Length	Notes
USB	16.4 ft (5 meters)	Supplied with Series 'A' Plug for direct connection to PC. Use with AquaComm™ software.
RS-232 ASCII	50 ft (15 meters)	RS-232 power injector recommended (PN: JBOX232). Use with AquaComm™ software.
DeviceNet	20 ft (6 meters)	See Table 1 for details. Use Device Tap hardware for trunk connection.
Modbus RTU	50 ft (15 meters)	See Table 2 for details. Use Device Tap hardware for trunk connection.
Modbus RS-232	50 ft (15 meters)	RS-232 power injector recommended (PN: JBOX232).
CANopen	72 ft (22 meters)	See Table 3 for details. Use Device Tap hardware for trunk connection.
Ethernet	328 ft (100 meters)	Use Ethernet Hub or Switch every 328 feet to extend cable distance.

Table 1: DeviceNet data rate versus drop length.

Data Rate	Trunk Distance	Drop Length	
		Maximum	**Cumulative**
125 kbps	1640 ft (500 meters)	20 ft (6 meters)	512 ft (156 meters)
250 kbps	820 ft (250 meters)		256 ft (78 meters)
500 kbps	328 ft (100 meters)		128 ft (39 meters)

Table 2: Modbus RTU (RS-485) data rate versus drop length.

Data Rate	Trunk Distance	Drop Length	
		Maximum	**Cumulative**
19.2 kbps	4000 ft (1219 meters)	50 ft (15 meters)	250 ft (76 meters)

Table 3: CANOpen data rate versus drop length.

Data Rate	Trunk Distance	Drop Length	
		Maximum	**Cumulative**
125 kbps	1640 ft (500 meters)	72 ft (22 meters)	512 ft (156 meters)
250 kbps	820 ft (250 meters	36 ft (11 meters)	256 ft (78 meters)
500 kbps	328 ft (100 meters)	18 ft (5.5 meters)	128 ft (39 meters)

Note 1: For Profibus DP (V0/V1), connect up to 30 Modbus RTU Communications Adapter with a Profibus Gateway Adapter (Part Number: PA26R on page 16.

Communication Adapter   Interface Module   pH Sensor Head

AdvantEDGE pH Sensor Head

Model Number
PH   Differential pH Sensor Head plugs in to any AdvantEDGE Interface Module and provides factory-calibrated measurement.
      Integral ground rod, temperature measurement and replaceable salt bridge/reference solution.

Body Material
2   CPVC (Low Cost, All-Purpose)
3   PEEK (Food Grade, Chemically

Measurement Electrode
1   General Purpose Glass (Standard)
2   HF Glass (recommended for hydrofluoric acid (HF) applications)
3   Low Temperature Glass (recommended for temperatures below 5°C)
4   Pure Water Glass (recommended for conductivity below 10µS/cm)
5   High Temperature Glass (recommended for temperatures above 85°C)

Sensor Tip
A   Protected Electrode (Standard)
B   Process Flat (reduce protrusions)
C   Face Seal for flow chamber installations (PEEK® material only)

Reserved Category

Ground Rod
1   316 Stainless Steel (for HF or customer specified applications)
2   Titanium (standard configuration)

| PH | | | | 1A | | ← — pH Sensor Head part number |

AdvantEDGE System Components	Description	Part Number	Reference
Interface Module	316 Stainless Steel 1-inch sensor body	IM11	Page 1
	CPVC 1-inch sensor body	IM21	
Communications Adapter	CPVC Modbus RTU with 10 foot cable	CA22B1A	Page 2
Profibus Gateway Adapter	Modbus RTU AdvantEDGE connects to Profibus DP	PA26R	Page 16

Local Display	Description	Part Number	Reference
LD500 Local Display	One 4-20mA output, PID. 24VDC.	LDBB0A1	Page 15
	One 4-29mA output, PID, 100 – 240 VAC	LDBB0A2	
	Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 24VDC.	LDCB4C1	
	Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 100-240VAC	LDCB4C2	

Typical pH Measurement Systems

(system without local display)

Communication Adapter

CPVC Body
Modbus RS-232   30 ft of cable

| CA | 2 | 2A | 3 | A |

Interface Module

CPVC Body
1-inch NPT

| IM | 2 | 1 |

pH Sensor Head

CPVC   General Purpose Glass
Protected Tip Titanium Ground Rod

| PH | 2 | 1 | A | 1A | 2 |

(system with local display)

Optional LD500 Local Display

One 4-20 output   24 VDC
Modbus RTU   No Relays

| LD | B | B | 4 | A | 1 |

Communication Adapter

CPVC Body
Modbus RTU   10 ft of cable

| CA | 2 | 2B | 1 | A |

Interface Module

CPVC Body
1-inch NPT

| IM | 2 | 1 |

pH Sensor Head

CPVC   General Purpose Glass
Process Flat Tip Titanium Ground Rod

| PH | 2 | 1 | B | 1A | 2 |

Note 1:   Table above shows selected Interface, Communications and LD500 components. See referenced pages for options.
Note 2:   Refer to data sheet for mounting hardware configuration details.

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pH Calibration and Storage Solutions and other Accessories

Product	Description	Part Number
Solutions		
4 pH buffer	For Calibration – 500ml bottle	PHSOL4
7 pH buffer	For Calibration – 500ml bottle	PHSOL7
10 pH buffer	For Calibration – 500ml bottle	PHSOL10
Standard Cell Solution – 60ml	For sensor reference chamber – 60ml bottle	RCS01
Standard Cell Solution – 500ml	For sensor reference chamber – 500ml bottle	RCS01-500
Reference Cell Solution	For sensor reference before serial number 2419 – 60ml bottle	RCS02
pH storage solution	Place in storage caps to keep glass electrode wet – 60ml bottle	RCS03
Salt Bridges		
PEEK, Protected Qty 1	For all pH and ORP sensors with PEEK bodies. Quantity 1	SBS01-1
PEEK, Protected Qty 3	For all pH and ORP sensors with PEEK bodies. Quantity 3	SBS01-3
PEEK, Protected Qty 10	For all pH and ORP sensors with PEEK bodies. Quantity 10	SBS01-10
PEEK, Process Flat Qty 1	For all pH and ORP sensors with PEEK bodies. Quantity 1	SBS02-1
PEEK, Process Flat Qty 3	For all pH and ORP sensors with PEEK bodies. Quantity 3	SBS02-3
PEEK, Process Flat Qty 10	For all pH and ORP sensors with PEEK bodies. Quantity 10	SBS02-10
PEEK, Face Seal Qty 1	For all pH and ORP sensors with PEEK bodies. Quantity 1	SBS08-1
PEEK, Face Seal Qty 3	For all pH and ORP sensors with PEEK bodies. Quantity 3	SBS08-3
PEEK, Face Seal Qty 10	For all pH and ORP sensors with PEEK bodies. Quantity 10	SBS08-10
CPVC, Protected Qty 1	For all pH and ORP sensors with CPVC bodies. Quantity 1	SBS03-1
CPVC, Protected Qty 3	For all pH and ORP sensors with CPVC bodies. Quantity 3	SBS03-3
CPVC, Protected Qty 10	For all pH and ORP sensors with CPVC bodies. Quantity 10	SBS03-10
CPVC, Process Flat Qty 1	For all pH and ORP sensors with CPVC bodies. Quantity 1	SBS04-1
CPVC, Process Flat Qty 3	For all pH and ORP sensors with CPVC bodies. Quantity 3	SBS04-3
CPVC, Process Flat Qty 10	For all pH and ORP sensors with CPVC bodies. Quantity 10	SBS04-10
Storage cover	Comes with sponge to keep stored sensor electrodes wet	SBC01

Note 1: Standard external salt bridge junctions constructed with Kynar. Ceramic available on request.
Note 2: Standard fill solutions can be gelled for high temperature applications on request.
Note 3: Refer to data sheet for mounting hardware configuration details.

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Communication Adapter   Interface Module   ORP Sensor Head

AdvantEDGE Interface Differential ORP Sensor Head

Model Number
ORP   Differential ORP Sensor Head plugs in to any AdvantEDGE Interface Module and provides factory-calibrated measurement. Integral ground rod, temperature measurement and replaceable salt bridge/reference solution.

Body Material
2   CPVC (Low Cost, All-Purpose)
3   PEEK (Food Grade, Chemically

Measurement Electrode
1   Platinum (Standard applications)
2   Gold (Poisoning applications)

Sensor Tip
A   Protected Electrode (Standard)
B   Process Flat (reduce protrusions)
C   Face Seal for flow chamber installations (PEEK® material only)

Reserved Category

Ground Rod
1   316 Stainless Steel (for HF or customer specified applications)
2   Titanium (standard configuration)

| ORP | | | | 1A | | ←   ORP Sensor Head part number |

AdvantEDGE System Components	Description	Part Number	Reference
Interface Module	316 Stainless Steel 1-inch sensor body	IM11	Page 1
	CPVC 1-inch sensor body	IM21	
Communications Adapter	CPVC Modbus RTU with 10 foot cable	CA22B1A	Page 2
Profibus Gateway Adapter	Modbus RTU AdvantEDGE connects to Profibus DP	PA26R	Page 16

Local Display	Description	Part Number	Reference
LD500 Local Display	One 4-20mA output, PID. 24VDC.	LDBB0A1	Page 15
	One 4-29mA output, PID, 100 – 240 VAC	LDBB0A2	
	Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 24VDC.	LDCB4C1	
	Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 100-240VAC	LDCB4C2	

Typical ORP Measurement Systems
(system without local display)

Communication Adapter   Interface Module   ORP Sensor Head

CPVC Body
Modbus RS-232   30 ft of cable

| CA | 2 | 2A | 3 | A |

CPVC Body
1-inch NPT

| IM | 2 | 1 |

CPVC   Platinum Electrode
Protected Tip   Titanium Ground Rod

| ORP | 2 | 1 | A | 1A | 2 |

(system with local display)

Optional LD500 Local Display   Communication Adapter   Interface Module   ORP Sensor Head

One 4-20 output   24 VDC
Modbus RTU   No Relays

| LD | B | B | 4 | A | 1 |

CPVC Body
Modbus RTU   10 ft of cable

| CA | 2 | 2B | 1 | A |

CPVC Body
1-inch NPT

| IM | 2 | 1 |

CPVC   Platinum Electrode
Process Flat Tip   10 ft of cable
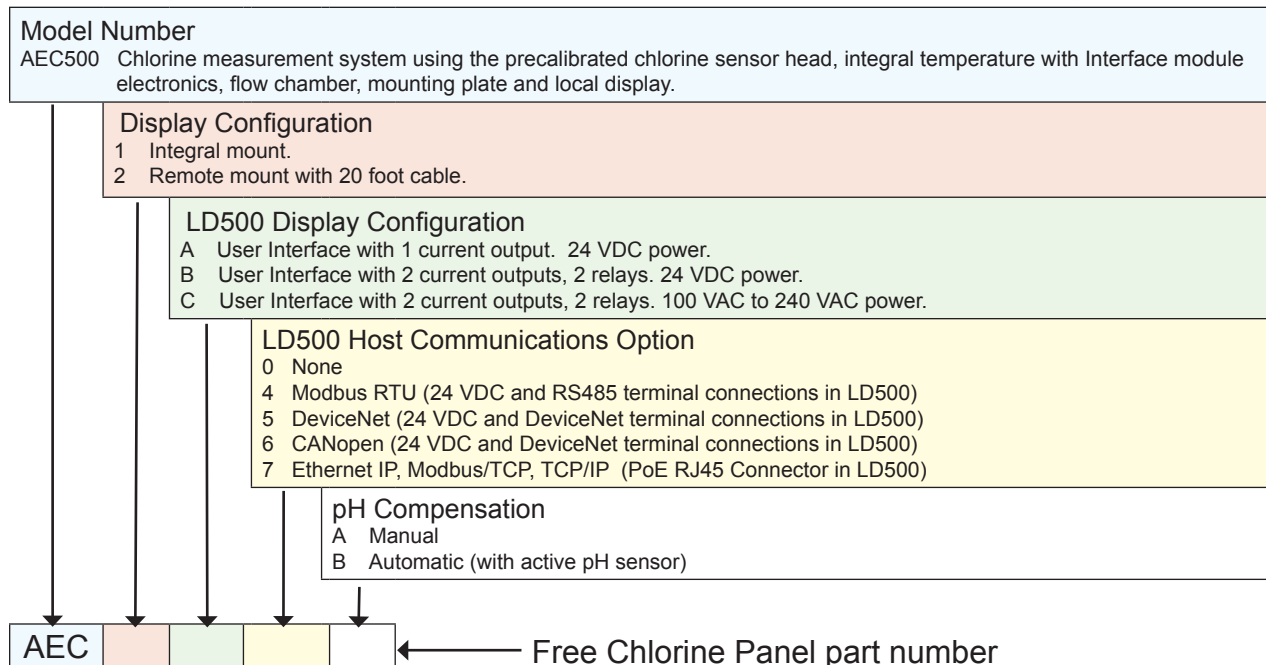
| ORP | 2 | 1 | B | 1A | 2 |

Note 1: Table above shows selected Interface, Communications and LD500 components. See referenced pages for options.
Note 2: Refer to data sheet for mounting hardware configuration details.

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ORP Calibration and Storage Solutions and other Accessories

Product	Description	Part Number
Solutions		
200mV Solution	ORP Calibration Solution – 500ml bottle	ORPSOL200
600mV Solution	ORP Calibration Solution – 500ml bottle	ORPSOL600
Standard Cell Solution – 60ml	For sensor reference chamber – 60ml bottle	RCS01
Standard Cell Solution – 500ml	For sensor reference chamber – 500ml bottle	RCS01-500
Reference Cell Solution – 60ml	For sensor reference before serial number 2419 – 60ml bottle	RCS02
ORP storage solution	For storage caps to keep glass electrode wet – 60ml bottle	RCS04
Salt Bridges		
PEEK, Protected Qty 1	For all pH and ORP sensors with PEEK bodies. Quantity 1	SBS01-1
PEEK, Protected Qty 3	For all pH and ORP sensors with PEEK bodies. Quantity 3	SBS01-3
PEEK, Protected Qty 10	For all pH and ORP sensors with PEEK bodies. Quantity 10	SBS01-10
PEEK, Process Flat Qty 1	For all pH and ORP sensors with PEEK bodies. Quantity 1	SBS02-1
PEEK, Process Flat Qty 3	For all pH and ORP sensors with PEEK bodies. Quantity 3	SBS02-3
PEEK, Process Flat Qty 10	For all pH and ORP sensors with PEEK bodies. Quantity 10	SBS02-10
PEEK, Face Seal Qty 1	For all pH and ORP sensors with PEEK bodies. Quantity 1	SBS08-1
PEEK, Face Seal Qty 3	For all pH and ORP sensors with PEEK bodies. Quantity 3	SBS08-3
PEEK, Face Seal Qty 10	For all pH and ORP sensors with PEEK bodies. Quantity 10	SBS08-10
CPVC, Protected Qty 1	For all pH and ORP sensors with CPVC bodies. Quantity 1	SBS03-1
CPVC, Protected Qty 3	For all pH and ORP sensors with CPVC bodies. Quantity 3	SBS03-3
CPVC, Protected Qty 10	For all pH and ORP sensors with CPVC bodies. Quantity 10	SBS03-10
CPVC, Process Flat Qty 1	For all pH and ORP sensors with CPVC bodies. Quantity 1	SBS04-1
CPVC, Process Flat Qty 3	For all pH and ORP sensors with CPVC bodies. Quantity 3	SBS04-3
CPVC, Process Flat Qty 10	For all pH and ORP sensors with CPVC bodies. Quantity 10	SBS04-10
Storage cover	Comes with sponge to keep stored sensor electrodes wet	SBC01

AdvantEDGE Free Chlorine Measurement Panel

Model Number
AEC500 Chlorine measurement system using the precalibrated chlorine sensor head, integral temperature with Interface module electronics, flow chamber, mounting plate and local display.

Display Configuration
1   Integral mount.
2   Remote mount with 20 foot cable.

LD500 Display Configuration
A   User Interface with 1 current output. 24 VDC power.
B   User Interface with 2 current outputs, 2 relays. 24 VDC power.
C   User Interface with 2 current outputs, 2 relays. 100 VAC to 240 VAC power.

LD500 Host Communications Option
0   None
4   Modbus RTU (24 VDC and RS485 terminal connections in LD500)
5   DeviceNet (24 VDC and DeviceNet terminal connections in LD500)
6   CANopen (24 VDC and DeviceNet terminal connections in LD500)
7   Ethernet IP, Modbus/TCP, TCP/IP (PoE RJ45 Connector in LD500)

pH Compensation
A   Manual
B   Automatic (with active pH sensor)

AEC [ ] [ ] [ ] [ ] ← Free Chlorine Panel part number

Recommended AEC Panel Systems

Typical System	Part Number
AEC Panel System. Integral LD500 with 1 output, flow chamber, Manual pH. 24VDC.	AEC1A0A
AEC Panel System. Integral LD500 with 2 outputs, 2relays, flow chamber, Automatic pH. 100/240VAC	AEC1C0B

Chlorine Electrolyte and Accessories

Product	Description	Part Number
Chlorine Electrolyte	Electrolyte in the PPM range. – 60ml bottle	RDOK9
Membrane Assembly	Chlorine Membrane Cap with pre-stretched membrane	DMR09
Protective Cap	To keep membrane wet when stored.	SBC01

Interface Module not needed

Communications Adapter   Turbidity Sensor Head

AdvantEDGE High Range Turbidity System

Model Number
RT1   High Range Turbidity Measurement System. 0 to 4000 NTU Range. Polycarbonate sensor body. Temperature measurement included. Precalibrated.

Back-Body and Comms Adapter Material
1   CPVC 1-Inch NPT
2   316 Stainless Steel 1-Inch NPT

AdvantEDGE Communications Adapter
4   Modbus RTU. (Required for use with LD500 Local Display).
5   DeviceNet
6   CANopen
7   Ethernet IP, Modbus TCP, TCP/IP. Connect to PoE Switch with RJ45 connector.
8   USB 10 foot cable with A type connector for use with PC and portable computers.

Cable Length
1   10 Feet
2   20 Feet
3   30 Feet
X   Where X = Number of Feet/10

| RT1 | | | | ← High Range Turbidity Measurement System Part Number |

AdvantEDGE System Components	Description	Part Number	Reference
Profibus Gateway Adapter	Modbus RTU AdvantEDGE connect to Profibus DP	PA26R	Page16

Local Display	Description	Part Number	Reference
LD500 Local Display	One 4-20mA output, PID. 24VDC.	LDBB0A1	Page 15
	One 4-20mA output, PID. 100 – 240 VAC	LDBB0A2	
	Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 24VDC.	LDCB4C1	
	Two 4-20mA outputs, PID, 2 Relays, Modbus Host,100-240VAC	LDCB4C2	

Turbidity Calibration Solutions

Product	Description	Part Number
Formazin Stock	4000 NTU Stock Solution – 500ml bottle	FOR4K
Formazin Kit	40 NTU Calibration Kit. Injector and 500ml mix bottle.	FOR40
Wash Adapter	Air Purge Wash Adapter for DO Electrode, CPVC	MH1142
Wash Adapter	Water Purge Wash Adapter for DO Elect., CPVC	MH1132

Typical Turbidity Systems
(system without local display)

Turbidity Sensor Head with Communications Adapter

CPVC 1 inch NPT
Modbus RTU 30 ft Cable

| RT1 | 1 | 4 | 3 |

(system with local display)

Optional LD500 Local Display   Turbidity Sensor Head with Communications Adapter

Two 2 4-20mA outputs 2 Relays
Modbus RTU   24 VDC

CPVC 1 inch NPT
Modbus RTU 10 ft Cable

| LD | B | B | 0 | A | 1 |

| RT1 | 1 | 4 | 1 |

NOTE 1: Use a Modbus RTU Communications Adapter for connection to a LD500 Local Display.
NOTE 2: Sensor is integrated into the Interface Module and is not needed as a separate line item.

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Communication Adapter   Interface Module   Contacting Conductivity Sensor Head

Contacting Conductivity / Resistivity Sensor Head

Model Number
CC   Two Electrode Conductivity Sensor Head plugs into any AdvantEDGE Interface Module and provides factory-calibrated measurement. Integral Temperature.
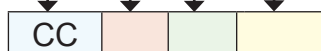
Body Material
2   CPVC (Low Cost, All Purpose)
3   PEEK® (Food Grade, High Temperature)

Electrode Material
1   Titanium (Standard)
2   316 Stainless Steel

Cell Constant
A   0.1 Cell Constant (500 µS/cm Range. PEEK® Material Recommended)
B   1.0 Cell Constant (500 µS/cm Range.
D   0.01 Cell Constant (Resistivity to 50 µS/cm Range. PEEK® Material Required)

CC				

Contacting Conductivity Sensor Head Part Number

AdvantEDGE System Components	Description	Part Number	Reference
Interface Module	316 Stainless Steel 1" sensor body CPVC 1-inch sensor body PEEK® 1-inch sensor body	IM11 IM21 IM31	Page 1
Communications Adapter	CPVC Modbus RTU with 10 foot cable	CA22B1A	Page 2
Profibus Gateway Adapter	Modbus RTU AdvantEDGE connects to Profibus DP	PA26R	Page 16

Local Display	Description	Part Number	Reference
LD500 Local Display	One 4-20mA output, PID. 24VDC. One 4-20mA output, PID. 100 – 240 VAC Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 24VDC. Two 4-20mA outputs, PID, 2 Relays, Modbus Host,100-240VAC	LDBB0A1 LDBB0A2 LDCB4C1 LDCB4C2	Page 15

Conductivity Solutions and Replacement Parts

Product	Description	Part No.
Calibration Solution	1000 µS/cm – 500ml bottle	SOL1000
Calibration Solution	2000 µS/cm – 500ml bottle	SOL2000
Calibration Solution	5000 µS/cm – 500ml bottle	SOL5000
Cleaning Solution	Conductivity Electrode Cleaner – 500ml bottle	SOL2C
Protective Cap	Protective Cap for Contacting Cond. Electrodes	SBC01

Common Contacting Contacting Conductivity Measurement Systems
(system without local display)

Communication Adapter

CPVC Body
Modbus RS-232   30 ft of cable

CA	2	2A	3	A

Interface Module

CPVC Body
1-inch NPT

IM	2	1

Conductivity Sensor Head

CPVC   Titanium Electrode
1.0 Cell Constant

CC	2	1	B

(system with local display)

Optional LD500 Local Display

One 4-20 output   24 VDC
Modbus RTU   No Relays

LD	B	B	4	A	1

Communication Adapter

CPVC Body
Modbus RTU   10 ft of cable

CA	2	2B	1	A

Interface Module

CPVC Body
1-inch NPT

IM	2	1

Conductivity Sensor Head

CPVC   Titanium Electrode
1.0 Cell Constant

CC	2	1	B

NOTE 1: Table above shows selected Interface, Com. and LD500 components. See referenced pages for options.
NOTE 2: Refer to data sheet for mounting hardware configuration details.
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Communication Adapter   Interface Module   Torodial Conductivity Sensor Head

Toroidal Conductivity Sensor Head

Model Number
TC   Toroidal Conductivity Sensor Head plugs into any AdvantEDGE Interface Module and provides factory-calibrated measurement. Integral temperature.

Body Material
2   CPVC (Low Cost, All Purpose)
3   PEEK® (Food Grade, High Temperature)

| TC | | |

← Toroidal Conductivity Sensor Head part number

AdvantEDGE System Components	Description	Part Number	Reference
Interface Module	316 Stainless Steel 1" sensor body CPVC 1-inch sensor body PEEK® 1-inch sensor body	IM11 IM21 IM31	Page 1
Communications Adapter	CPVC Modbus RTU with 10 foot cable	CA22B1A	Page 2
Profibus Gateway Adapter	Modbus RTU AdvantEDGE connects to Profibus DP	PA26R	Page 16

Local Display	Description	Part Number	Reference
LD500 Local Display	One 4-20mA output, PID. 24VDC. One 4-20mA output, PID. 100 – 240 VAC Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 24VDC. Two 4-20mA outputs, PID, 2 Relays, Modbus Host,100-240VAC	LDBB0A1 LDBB0A2 LDCB4C1 LDCB4C2	Page 15

Conductivity Solutions and Replacement Parts

Product	Description	Part No.
Calibration Solution	1000 µS/cm – 500ml bottle	SOL1000
Calibration Solution	2000 µS/cm – 500ml bottle	SOL2000
Calibration Solution	5000 µS/cm – 500ml bottle	SOL5000
Cleaning Solution	Conductivity Electrode Cleaner – 500ml bottle	SOL2C

Common Toroidal Conductivity Measurement Systems
(system without local display)

Communication Adapter   Interface Module   Toroidal Conductivity Sensor Head

CPVC Body
Modbus RS-232   30 ft of cable

CPVC Body
1-inch NPT

CPVC

| CA | 2 | 2A | 3 | A |

| IM | 2 | 1 |

| TC | 2 |

(system with local display)

Optional LD500 Local Display   Communication Adapter   Interface Module   Toroidal Conductivity Sensor Head

One 4-20 output   24 VDC
Modbus RTU   No Relays

CPVC Body
Modbus RTU   10 ft of cable

CPVC Body
1-inch NPT

CPVC

| LD | B | B | 4 | A | 1 |

| CA | 2 | 2B | 1 | A |

| IM | 2 | 1 |

| TC | 2 |

NOTE 1: Table above shows selected Interface, Com. and LD500 components. See referenced pages for options.
NOTE 2: Refer to data sheet for mounting hardware configuration details.

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Communication Adapter   Interface Module   Dissolved Oxygen Sensor Head

Dissolved Oxygen Sensor Head

Model Number
DO31 Dissolved Oxygen (ppm) Sensor Head plugs into any AdvantEDGE Interface Module and provides factory-calibrated measurement. Integral Temperature. Replaceable membrane cap. PEEK® Body.

Sensor Tip Options
A Protected membrane (Standard)
B Process Flat (without face seal)
C Face Seal (for flow chamber mounting)

Reserve Category

Membrane Options
A FEP Teflon (Standard)
B Membrane w/SS mask to protect membrane from particles and pressure

| DO31 | | 1 | |

← Dissolved Oxygen Sensor Head part number

AdvantEDGE System Components	Description	Part Number	Reference
Interface Module	316 Stainless Steel 1" sensor body CPVC 1-inch sensor body PEEK® 1-inch sensor body	IM11 IM21 IM31	Page 1
Communications Adapter	CPVC Modbus RTU with 10 foot cable	CA22B1A	Page 2
Profibus Gateway Adapter	Modbus RTU AdvantEDGE connects to Profibus DP	PA26R	Page 16

Local Display	Description	Part Number	Reference
LD500 Local Display	One 4-20mA output, PID. 24VDC. One 4-20mA output, PID. 100 – 240 VAC Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 24VDC. Two 4-20mA outputs, PID, 2 Relays, Modbus Host,100-240VAC	LDBB0A1 LDBB0A2 LDCB4C1 LDCB4C2	Page 15

Dissolved Oxygen Accessories and Electrolyte

Product	Description	Part Number
ppm electrolyte	Electrolyte in ppm range – 60ml bottle	RDOK1
Protected Cap	Protected Cap with Pre-stitched membrane	DMR03
Protected Cap & Mask	Protected Cap with Pre-stitched membrane & mask	DMR03M
Storage Cover	To keep stored membrane wet when stored	SBC01

Common Dissolved Oxygen Measurement Systems
(system without local display)

Communication Adapter
CPVC Body
Modbus RS-232   30 ft of cable

| CA | 2 | 2A | 3 | A |

Interface Module
CPVC Body
1-inch NPT

| IM | 2 | 1 |

Dissolved Oxygen Sensor Head
CPVC   Protected Membrane
FEP Teflon

| DO31 | A | 1 | A |

(system with local display)

Optional LD500 Local Display
One 4-20 output   24 VDC
Modbus RTU   No Relays

| LD | B | B | 4 | A | 1 |

Communication Adapter
CPVC Body
Modbus RTU   10 ft of cable

| CA | 2 | 2B | 1 | A |

Interface Module
CPVC Body
1-inch NPT

| IM | 2 | 1 |

Dissolved Oxygen Sensor Head
CPVC   Process Flat
FEP Teflon

| DO31 | B | 1 | A |

Communication
Adapter
not needed

Interface
Module
not needed

Optical Dissolved Oxygen RDO Sensor

Model
OPDO Optical Dissolved Oxygen Sensor Assembly. 0-20 PPM (mg/1), 0-200% saturation. Integrated temperature compensation.

Communications	
1	For connection to LD500 Local Display. See LD500 options below and on Page 15.
2	4-20 mA, Modbus (RS-485), SDI-12. For connection to PLC or SCADA.No Local Display.

Cable Connection Type	
C	Titanium connector at back end of Sensor body. Order cable separately. See Accessories.
D	Cable permanently attached to Sensor body.

Cable Length	
3	30 Feet. For permanently attached cable.
X	Where X = Number of Feet / 10. For permanently attached cable.
N	No Cable. For Sensor having titanium connector. Order cable separately. See Accessories

| OPDO | | | | ← Optical Dissolved Oxygen Sensor Assembly part number |

Local Display Options For OPDO "1" Configurations	Description	Part Number	Reference
LD500 Local Display	One 4-20 mA output, 24 VDC One 4-20 mA output, 100 – 240 VAC Two 4-20 mA outputs, 2 Relays, Modbus Master, 24 VDC Two 4-20 mA outputs, 2 Relays, Modbus Host, 100-240 VAC	LDBB0A1 LDBB0A2 LDCB4C1 LDCB4C2	Page 15

OTHER HOST COMMUNICATIONS OPTIONS AVAILABLE. SEE PAGE 16

Product	Description	Part Number
Sensor Cap Replacement Kit	Replacement Cap Assembly. Must be replaced annually Includes sensor cap, lubricant and lens wipe	DMROP03
Cable	Cable with Titanium Connector for use only with Sensor With Connector Type "C"	-----------
O-Ring Replacement Kit	Includes o-ring for sensor body, internal nose cone o-ring, sensor cap o-rings, lubricant and lens wipe	OPORKIT
Nose Cone Replacement Kit	Includes Nose, lubricant, lens wipe, pre-installed o-ring and o-ring for sensor body	OPNOSEKIT
Calibration Kit	Includes Calibration and Storage Chamber, Calibration Cap, Storage Cap and Sodium Sulfite	OPCALKIT

Common Optical Dissolved Oxygen Measurement Systems

(system with local display)

Optional LD500 Local Display

One 4-20 output
24 VDC

| LD | B | B | 0 | A | 1 |

Optical Dissolved Oxygen Sensor Assembly

For LD500
Permanent 30 ft cable

| OPDO | 1 | D | 3 |

(system without local display)

Optical Dissolved Oxygen Sensor Assembly

For 4-20mA, Modbus - No Local Display
Permanent 30 ft cable

| OPDO | 2 | D | 3 |

Communication Adapter | Interface Module | Dissolved Ozone Sensor Head

Dissolved Ozone Sensor Head

Model Number
OZ31 Ozone Sensor Head plugs into any AdvantEDGE Interface Module and provides factory-calibrated measurement.
Integral temperature. Replaceable Membrane Cap. PEEK

Sensor Tip Options
B   Process Flat (Standard)
C   Face Seal (For Flow Chamber Mounting)

| OZ31 | |

Dissolved Ozone Sensor Head part number

AdvantEDGE System Components	Description	Part Number	Reference
Interface Module	316 Stainless Steel 1" sensor body CPVC 1-inch sensor body PEEK® 1-inch sensor body	IM11 IM21 IM31	Page 1
Communications Adapter	CPVC Modbus RTU with 10 foot cable	CA22B1A	Page 2
Profibus Gateway Adapter	Modbus RTU AdvantEDGE connects to Profibus DP	PA26R	Page 16

Local Display	Description	Part Number	Reference
LD500 Local Display	One 4-20mA output, PID. 24VDC. One 4-20mA output, PID. 100 – 240 VAC Two 4-20mA outputs, PID, 2 Relays, Modbus Host, 24VDC. Two 4-20mA outputs, PID, 2 Relays, Modbus Host,100-240VAC	LDBB0A1 LDBB0A2 LDCB4C1 LDCB4C2	Page 15

Product	Description	Part Number
Ozone Electrolyte Membrane Cap Flat Membrane Cap Face Seal Protective Cap	Electrolyte in the ppm range – 60ml bottle Process Flat for Ozone Flat cap for O-Ring with pre-stretched membrane To keep membrane wet when stored	RDOK2 DMR08-Z DMR04-Z SBC01

Common Dissolved Ozone Measurement Systems

(system without local display)

Communication Adapter | Interface Module | Dissolved Ozone Sensor Head

CPVC Body Modbus RS-232 30 ft of cable	CPVC Body 1-inch NPT	PEEK Process Flat Sensor Tip

CA	2	2A	3	A

IM	2	1

OZ31	B

(system with local display)

Optional LD500 Local Display | Communication Adapter | Interface Module | Dissolved Ozone Sensor Head

One 4-20 output 24 VDC Modbus RTU No Relays	CPVC Body Modbus RTU 30 ft of cable	CPVC Body 1-inch NPT	PEEK Face Seal

LD	B	B	4	A	1

CA	2	2B	1	A

IM	2	1

OZ31	C

NOTE 1: Table above shows selected Interface, Com. and LD500 components. See referenced pages for options.
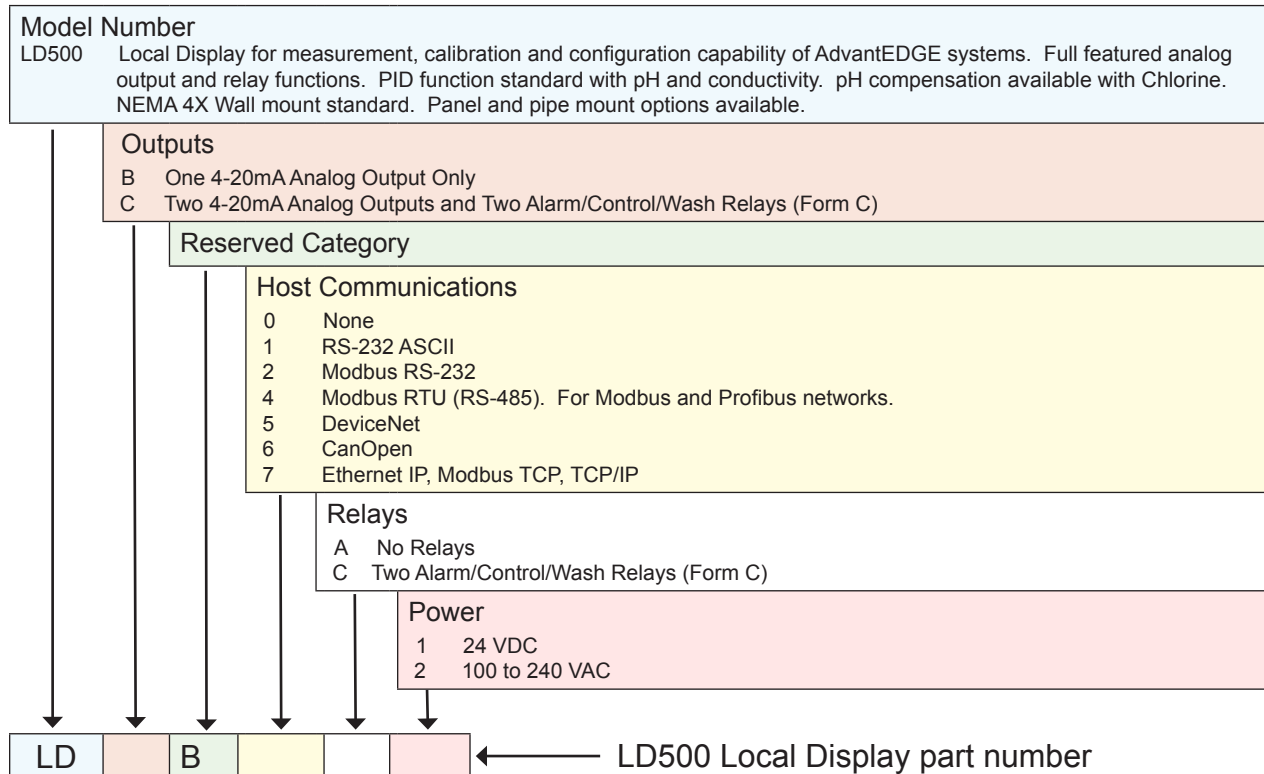NOTE 2: Refer to data sheet for mounting hardware configuration details.

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AdvantEDGE LD500 Local Display

Model Number	
LD500	Local Display for measurement, calibration and configuration capability of AdvantEDGE systems. Full featured analog output and relay functions. PID function standard with pH and conductivity. pH compensation available with Chlorine. NEMA 4X Wall mount standard. Panel and pipe mount options available.

Outputs

B   One 4-20mA Analog Output Only
C   Two 4-20mA Analog Outputs and Two Alarm/Control/Wash Relays (Form C)

Reserved Category

Host Communications

0   None
1   RS-232 ASCII
2   Modbus RS-232
4   Modbus RTU (RS-485). For Modbus and Profibus networks.
5   DeviceNet
6   CanOpen
7   Ethernet IP, Modbus TCP, TCP/IP

Relays

A   No Relays
C   Two Alarm/Control/Wash Relays (Form C)

Power

1   24 VDC
2   100 to 240 VAC

LD		B				← LD500 Local Display part number

Hardware	Description	Part Number
¼ DIN Panel Mount	Hardware for mounting in a 3.5" square cutout.	DIN4KIT
½ DIN Panel Mount	Hardware for mounting in a 5.25" square cutout.	DIN2KIT
Pipe Mount	Hardware to mount onto a 2" pipe.	PIP2KIT
AC/DC Power Supply	External 100-240 VAC input to 24VDC output.	PS24
Sun Shield	To protect Display from full sunlight	SUN01
Cord Grips	½ Inch cord grips for conduit boxes (Qty 5)	CGRIP01

NOTE 1: Relays are only available when choosing 2 analog outputs.
NOTE 2: For Profibus DP (V0/V1), configure the LD500 with Modbus RTU Host Communications and purchase a Profibus Gateway Adapter (PN: PA26R on Page 16).

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Profibus Gateway Adapter

Model Number
PA500 Profibus Gateway Adapter connects up to 30 Modbus Communications Adapter to a Profibus DP (V0 or V1) network with M12 connector. Full-featured measurement, calibration, configuration and diagnostics. 24 VDC Power.

	Reserve Category
		Reserve Category

PA	26	R

PA500 Profibus Gateway Adapter part number

Communications Hardware	Description	Part Number
Profibus Accessories M12 Profibus Tee Connector Male Termination Network Female Termination Network Female Field-wireable M12 Connector Male Field-wireable M12 Connector 9-Pin Male D Connector Profibus Cable	Mating connector for Profibus Gateway Adapter M12 Termination at the end of the network-Male M12 Termination at the end of the network-Female Female field-wireable connection to M12 Tee Profibus cable connection to M12 Tee Profibus cable to D connector (usually to PLC) Profibus network cable (purple).	AS-RKSW2RSSW45 AS-RSSW45-TR AS-RKSW45-TR AS-BMWS8151-8.5 AS-BMSWS8151-8.5 AS-D9S PSECxx; xx=ft
Modbus/DeviceNet Accessories 1 Port Device Tap, DIN Rail 2 Port Device Tap, DIN Rail 4 Port Device Tap, NEMA4X Multi-port termination resistors Extension Cable	1 Interface connection on network with DIN rail 2 Interface connections on network with DIN rail 4 Interface connections on network with NEMA4X Termination for Device Taps at the end of network Interface extension cable	AS-810-902/000-001 AS-810-901/000-001 AS-810-900/000-001 MPTR DSECxx; xx=ft
Ethernet Accessories Modbus to Ethernet Gateway Power Injector with Cross Over cable PoE Switch – Consumer Grade	Up to 32 parameters from multiple Modbus Interface One Interface plugs in directly for power injection. 8 Interface plugs in directly.	AS-451EM-D AS-POE-48i AS-FS108P
General Accessories RS-232 junction w/power and connector AC/DC Power Supply AquaComm™ Software	Connect RS-232 Interface to power and computer External 100-240 VAC input to 24VDC output PC software for USB and RS-232 Advantage. Measure, calibrate, configure, diagnose, data log	JBOX232 PS24 AquaComm™

NOTE 1: Consult communications hardware data sheet for product descriptions.
NOTE 2: Use Port Device Tap to connect multiple Modbus RTU Communications Adapters to the Profibus Gateway Adapter.

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Mounting Hardware

Mounting Hardware	Description	Part Number
1.5" Union Mount 1.5" Union Mount Assembly	Stainless Steel for Turbidity Sensor CPVC for Turbidity Sensor Stainless Steel CPVC	MH1041-RT MH1042-RT MH1041 MH1042
1.5" Tee	Schedule 40, Stainless Steel Schedule 80, CPVC	MH3011 MH3022
Immersion Assembly	7 ft PVC extension with junction box – 1" Sensors 7 ft PVC extension with junction box - for Optical DO Sensors	MH3083 MH3083-RD
Immersion Assembly w/ Swivel Rail Mounting	7 ft PVC extension with junction box – 1" Sensors With swivel hand rail mount.	MH1242
Immersion Assembly w/ Swivel and Ball Float	7 ft PVC extension with junction box – 1" Sensors With swivel hand rail mount and inflatable float.	MH1252
1.5" Ball Valve	Low Pressure, CPVC Low Pressure, Stainless Steel High Pressure, CPVC High Pressure, Stainless Steel	MH1112 MH1111 MH1122 MH1121
Flow Chamber Assembly	Flow Chamber with mounting plate w/ kynar fittings. Dual Flow Chamber with mounting plate w/ fittings.	FC002 FC003
Ball Float Platform	PVC Float Platform for up to 4 AdvantEDGE Systems	MHFB02
Wash Hardware	Attach air/water purge block to sensor body. Works with compressor & LD500 wash relay or PLC. Attach air/water purge block to Optical DO Sensor body. Works with customer supplied compressor & LD500 wash relay or PLC.	MH1222 MH1222-RD
Junction box Extension Cable	For extension cables. Terminal strip included. Interface Extension cable	JBOXX01 DSECxx; xx=ft

Guide to Ordering Worksheet

pH System

Optional LD500 Local Display	Communication Adapter	Interface Module	pH Sensor Head
LD	B					CA			A	IM		1	PH			1A	

ORP System

Optional LD500 Local Display	Communication Adapter	Interface Module	OPR Sensor Head
LD	B					CA			A	IM		1	ORP			1A	

Turbidity System

Optional LD500 Local Display	Turbidity Sensor Head
LD	B					RT1			

Contacting Conductivity/Resistivity System

Optional LD500 Local Display	Communication Adapter	Interface Module	Contacting Conductivity Sensor Head
LD	B					CA			A	IM		1	CC			

Toroidal Conductivity System

Optional LD500 Local Display	Communication Adapter	Interface Module	Toroidal Conductivity Sensor Head
LD	B					CA			A	IM		1	TC		

Dissolved Oxygen System

Optional LD500 Local Display	Communication Adapter	Interface Module	Dissolved Oxygen Sensor Head
LD	B					CA			A	IM		1	DO31		1	

Optical Dissolved Oxygen RDO System

Optional LD500 Local Display	Optical Dissolved Oxygen Sensor Head
LD	B					OPDO			

Dissolved Ozone System

Optional LD500 Local Display	Communication Adapter	Interface Module	Dissolved Ozone Sensor Head
LD	B					CA			A	IM		1	OZ31	

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