

SLC-220 Smart Controller

The Smart Leakwise Controller (SLC-220) is a digital signal processor that interfaces with Leakwise ID-220 Series Sensors to report hydrocarbons spill/leak alerts, including layer buildup and thickness, to users via a wide variety of outputs and communication interfaces for local or remote reporting. The SLC-220's modular design and flexible configuration provides solutions for all specific customer needs. It can be AC or DC line or battery powered, and operates in wired and/or wireless applications. The SLC-220 supports up to four (4) Leakwise Sensors per unit. Multiple SLC-220 Controllers can be interconnected to provide a cost-effective, multisensory network.

Applications

Typical SLC-220 and Leakwise ID-220 Series Sensor applications include oil spill/leak monitoring in tank farm sumps, discharge from wastewater treatment plants, hydrocarbon pipeline pumping stations, hydroelectric and fossil fuel power plants, transformer substations, groundwater monitoring wells, remediation sites, offshore terminals, and intake of sea water desalination plants.

Features

- Low-power consumption with wired or wireless connection to customer's main control system.
- A GSM or PTP transmitter for wireless communication of status and alarm messages and a Leakwise GSM or PTP receiver with Modbus connection to customer's main control system.
- Low-cost Cellular wireless operation by text messaging to cellphones. Optional communication when using a Smart Leakwise Receiver (SLR-220). Backup communication occurs through a free call-and-hang-up protocol.
- Centralized control of multiple sensors using multiple controllers connected by a common RS-485 cable to a central SCADA or to an SLR-220 Receiver that collects the data.
- Built-in self-diagnostics of the Leakwise Sensors and SLC-220.
- Processor firmware updates can be simply downloaded by the user for keeping the product updated.



SLC-220/MULTI in NEMA 4 enclosure, with LCD

SLC-220 Operation

The SLC-220 is designed for low-power consumption in onshore applications, as well as in remote or offshore applications with only a solar power source. Therefore, the operating software extensively uses a "sleep mode" algorithm that turns off unnecessary hardware. Each monitored sensor is powered on for a short duration for sampling and decision making, and then turned off. This off interval is user-programmable. Careful selection and programming of optional features will enable continuous autonomous operation.

All SLC-220 setting and calibration can be changed locally or remotely through:

- The LCD screen or connection (RS-232) to a PC with the free SLC-Manager PC program.
- Connection to the control room through Modbus.
- Cellular phone messaging if a Cellular modem is installed.

Communication Options

Cellular Modem and Receiver

When a Cellular modem is installed, the SLC-220 can report to multiple remote locations by sending human-friendly text messages to six (6) cell phone recipients, and/or to a SLR-220/GSM Receiver. All SIM cards supplied by the customer.

The SLR-220 receives and processes data from multiple remote SLC-220 Controllers and reports to the central control room SCADA via Modbus or dry contacts or 4-20mA output.

The receiver verifies timely reporting from all the remote sensors. The information normally received includes sensor name, status, sensor signal value, and battery voltage (where relevant). The additional call-and-hang-up mechanism ensures very low operating costs.

Point-to-Point Radio (PTP Radio)

The SLC-220 can be used with a PTP Radio transmitter in addition to or instead of a Cellular modem. Various frequencies are available depending on the country. The transmitter range is up to 10 km. Consult the factory for additional information.

SLC-220 Standard Configuration

The SLC-220 comes in two basic configurations, and optional enhancements are available.

SLC-220/N4/LI/RL-420/COM/BASIC includes:

- RS-232 port for setup by PC using the free SLC-Manager PC program.
- RS-485 port for interfacing to customer control system (such as SCADA) for reports, interrogation and setup through Modbus protocol.
- Support for up to two (2) ID-220 Series Sensors.
- One Outputs board with five (5) relays and one (1) 4-20mA output.
- NEMA 4X (IP65) enclosure.
- Set of status Lights on front panel.

SLC-220/N4/LI/RL-420/COM/MULTI includes same as the BASIC version, but supports up to four (4) ID-220 Series Sensors.

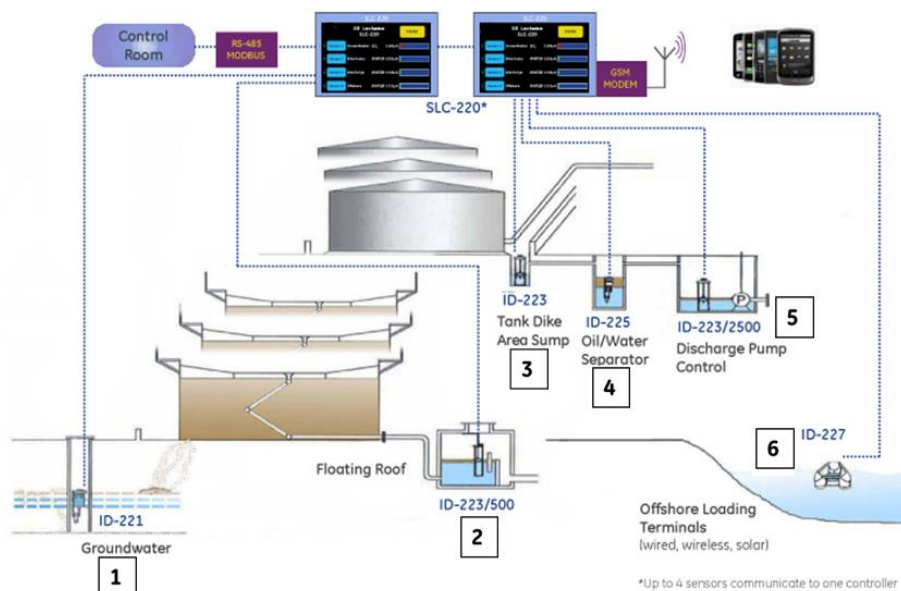
SLC-220 Options

- Additional Outputs boards: Up to a total of two (2) boards for **BASIC** or four (4) for **MULTI**.
- 4.3 inch color LCD with back light and touch panel installed on the front panel. The display enables easy and intuitive viewing, setting, and calibration. Available for **MULTI** only.
- Cellular modem: 3G Quad-Band plus an omnidirectional antenna to enable the use of the Cellular communication option.
- Zener Safety Barriers for connecting to sensors installed in hazardous areas.
- Enclosure for hazardous area installation of SLC-220 controller: Exd or NEMA 7.



SLC-220/MULTI in Exd enclosure, without LCD

LEAKWISE® - Tank Farm Applications



SLC-220 Controller Specifications¹



Sensor Support	Up to four (4) sensors can be monitored by each SLC-220/MULTI controller, two (2) by SLC-220/BASIC. Multiple control units can be linked together via RS-485 interlinks to create a large multi-sensor network - TBA.
Measurement Resolution	0.1% of sensor's output signal
Status Lights	Water, Oil, High Oil, Air, Fail, Power On: Six (6) status lights common to all four (4) sensors; Option: Oil 1, Oil 2, Oil 3, Oil 4 (Oil or High Oil per sensor), Fail (common), Power On.
Display	LCD display installed on the front panel: 4.3" color LCD, 480 x 272 resolution, with back light and touch panel operation.
Serial Ports	1 x RS-232 for configuration and calibration (interface with PC/Laptop or portable LCD display) 1 x RS-232 port for using Cellular or PTP Radio Modem 1 x RS-485 half duplex port for communication to SCADA via Modbus protocol 1 x RS-485 half duplex port for network interconnection between SLC-220 Controllers
Port Settings	All RS-232 / RS-485 ports: 115,200 bps, eight (8) data bits, no parity, one (1) stop bit. Only RS-232 for modem uses flow control.
Outputs	Each Output Board includes: <ul style="list-style-type: none">• Five (5) dry contact relays: A separate SPDT relay (N.O. and N.C. contacts, rated 6A at 250 VAC or 30 VDC) for Water, Oil, High Oil, Air and Fail indication for one sensor. May be used in Fail Safe mode. By a setting, one board can serve four (4) sensors and the relays will indicate Oil / High Oil for sensor 1, Oil / High Oil for sensor 2, etc., and the Fail relay will be common to all sensors.• One (1) 4-20 mA output: Current source output for indicating measured oil layer thickness and trend. User configurable to 0-20 mA, 4-20 mA, 0-24 mA or 0-5V output range.• Up to two (2) boards can be installed in SLC-220/BASIC; Up to four (4) in SLC-220/MULTI. As a default one Outputs Board is supplied inside each controller.
Built in Test	Built-in test for sensors and system diagnostics
Processor & Memory	TI low power microcontroller with internal and external memory. Firmware upgrade through serial port. Programmable parameters by the user via LCD or SLC-Manager PC program.
Ambient Temperature	<ul style="list-style-type: none">• Controller with 9-36VDC input voltage: -40 °C to +85 °C• Controller with 100-240VAC input voltage: -20 °C to +70 °C; Lower range available.• Controller with LCD display: -20 °C to +70 °C• Controller with Cellular / PTP radio modem: -20 °C to +55 °C
Humidity	5 to 95% non-condensing
Power Supply	110/220VAC or 12/24VDC; Optional solar panel with charger and 12VDC battery.
Power Consumption	Designed for low-power consumption when not using Outputs Board(s) or LCD. <ul style="list-style-type: none">• Each sensor consumes 1mW–120mW maximum (depending on user sampling setting); [four (4) sensors = 0.48W max]. Sensors are turned off when not sampling.• The LCD display consumes 0.6W maximum with backlight which may be turned off.• Each Outputs Board consumes 2.6W maximum [four (4) output boards = 10.4W max]. Total: 11.5W maximum, not including a Cellular / PTP radio modem, which can be turned off when not in use.
Enclosure Options	<ul style="list-style-type: none">• NEMA 4X (UL for USA and Canada) or IP65, for non-hazardous areas• ATEX and IECEx <i>Flameproof</i>, certified as II2(1)GD - Ex d [ia Ga] IIB T6 Gb IP66• UL for USA & Canada, <i>Explosion-proof</i> NEMA 7 for Class I Groups B, C & D, also NEMA 4• Controller without enclosure (Back Plate) for installation in a user-cabinet
Dimensions	NEMA 4X / IP65 enclosure: <ul style="list-style-type: none">• SLC-220/BASIC: 297 x 297 x 191 mm (11.69 x 11.69 x 7.52 in)• SLC-220/MULTI: 398 x 297 x 191 mm (15.67 x 11.69 x 7.52 in)
Installation Distance	Maximum distance between the SLC-220 and ID-220 Sensors: Up to 1,200 m (4,000 ft.), subject to hazardous area restrictions and use of Zener Safety Barriers. There is place for installation of Safety Barriers in all types of enclosures.
Cellular Modem	Optional. Quad band cellular modem and omnidirectional antenna to enable wireless remote reporting and setting to / from up to six (6) cellular phones (human users). The user supplies a SIM card for each modem.
PTP Radio Modem	Optional. TBA.
SLR-220 Receiver	A special version of SLC-220 for interfacing multiple wired and wireless SLC-220 Controllers to end-user control system. TBA.

¹ Specifications may be subject to change without prior notice.

For special applications, it may be possible to offer products that deviate from the above specifications.