

# ioLogik 2500 HSPA/GPRS/WLAN Series

*Smart wireless remote I/O with Click&Go Plus Logic*



- > Front-end intelligence with Click&Go Plus control logic, up to 48 rules
- > Using Cellular Data Access software, SCADA systems can directly communicate with cellular devices hidden behind private IP addresses
- > Active communication with MX-AOPC UA Server
- > Automatically complement disconnection period data with MX-AOPC UA Logger software
- > 4-port unmanaged switch built in for linking to Ethernet devices
- > I/O expansion port for daisy chaining up to 8 ioLogik E1200 units
- > 3-in-1 RS-232/422/485 serial port for connecting to serial devices in the field
- > Simplify I/O management with MXIO library for Windows or Linux
- > Wide operating temperature range of -30 to 70°C (-22 to 158°F)



## Introduction

The ioLogik 2500 is a smart remote I/O product with unique hardware and software designs, making it an ideal solution for a variety of industrial data acquisition applications.

The ioLogik 2500 HSPA/GPRS series features dual SIM failover, 3-step cellular reconnection, and dynamic IP access. The WLAN series features 802.11a/b/g reliable wireless communication.

The ioLogik 2500's hardware design includes a 4-port unmanaged Ethernet switch and 2 serial ports, enabling the ioLogik 2500 to seamlessly connect to a variety of field devices. One of the Ethernet ports can be used to link to 8 daisy-chained ioLogik E1200 expansion modules to provide more than 100 channels. The ioLogik 2500 acts as the "head" unit, with Click&Go Plus logic used to control the entire I/O array. Most importantly, the ioLogik 2500's single IP is all that's required to connect the entire I/O array to your network, providing the perfect solution for industrial field sites that have an insufficient number of IP addresses.

## Dual SIM Failover

The ioLogik 2500 HSPA/GPRS series has dual SIM slots for inserting SIM cards from different carriers. It can switch over to a different carrier automatically when one of the cellular networks gets disconnected, ensuring that your device will always be online.



### 3-step Cellular Reconnection

If the cellular network is still disconnected after dual SIM failover, the ioLogik 2500 series will first try to reset the cellular modem, then reset the system software if it is still not working, and lastly reboot the entire system after being disconnected for a user-defined period of time.

Based on Moxa's experience, 90% of cellular connection issues can be solved by resetting the cellular modem. 3-step cellular reconnection not only helps prevent data and control loss, but also reduces your cost since your engineers won't need to make as many service calls to reboot devices located at remote sites.

### Dynamic IP Access

Most carriers provide dynamic and private IP address SIM cards, and although private IP cards are cheaper, they cannot be used to provide direct access to the cloud. Moxa's Cellular Data Access software enables this type of connection by establishing a special data route between the ioLogik 2500 HSPA/GPRS series and the cloud. Only one public IP address is needed to use Moxa's Cellular Data Access software, allowing you to easily update internal register values, change output channel status, and modify the configurations of devices connected to an ioLogik 2500, all through the cloud.



### VPN—Build a Reliable and Secure Cellular Communication Network

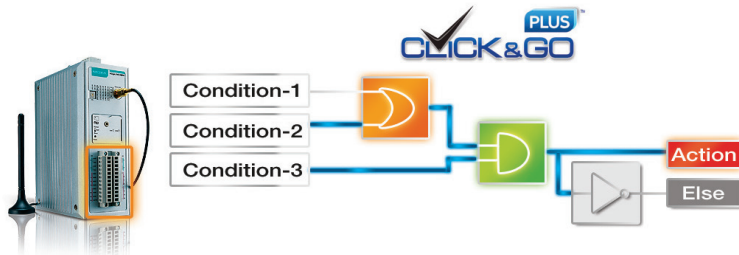
For security purposes, the ioLogik 2500-GPRS/HSPA also supports IPSec for building a secure VPN tunnel to the host station. With the help of VPNs, cellular devices acting as a VPN client can initiate a

connection with a VPN server. Once the connection is established, cellular devices can communicate with other network devices on the same private network.

### Powerful Control Logic from the New Click&Go Plus™

The new Click&Go Plus™ control logic now supports up to 48 rules with further upgrades to 8 conditions/actions. In addition, its graphical user interface provides 3 logic gates and 3 multi-layers, helping you build more powerful and efficient IO solutions.

Once you finish setting up your Click&Go Plus™ logic rules, IOxpress's easy-to-use simulation function can be used to find potential errors in your Click&Go Plus™ rules before uploading them to your online devices.



### One IP for Multiple Expansion I/Os Gives You a Smarter Data Acquisition Solution

The ioLogik 2500's unique IO expansion hardware design lets you link up to 8 ioLogik E1200 modules into a versatile I/O array with 100+ different I/O channels. The ioLogik 2500 acts as the perfect "head"

unit, using Click&Go Plus logic to control the entire I/O array, and providing a single IP to connect the entire I/O array to your network.



## : ioLogik 2512 Specifications

### Inputs and Outputs

**Digital Inputs:** 8 channels

**Configurable DIOs (by software):** 8 channels

**Isolation:** 3k VDC or 2k Vrms

### Digital Input

**Sensor Type:** Wet Contact (NPN or PNP) and Dry Contact

**I/O Mode:** DI or Event Counter

**Dry Contact:**

- On: short to GND
- Off: open

**Wet Contact (DI to COM):**

- On: 10 to 30 VDC
- Off: 0 to 3 VDC

**Common Type:** 8 points per COM

**Counter Frequency:** 2.5 kHz

**Digital Filtering Time Interval:** Software configurable

### Digital Output

**Type:** Sink

**I/O Mode:** DO or Pulse Output

**Pulse Output Frequency:** 5 kHz

**Over-Voltage Protection:** 45 VDC

**Over-Current Protection:** 1.5 A per channel @ 25°C

**Over-Temperature Shutdown:** 175°C (min.)

**Current Rating:** 500 mA per channel @ 25°C

**DIO Output Leakage Current:** < 1 mA @ 30 VDC

### Power Requirements

**Input Voltage:** 9 to 48 VDC

**Input Current:**

- HSPA Model: 390 mA @ 24 VDC
- GPRS Model: 416 mA @ 24 VDC
- WL1 Model: 328 mA @ 24 VDC

**MTBF (mean time between failures)**

**Time:**

- HSPA model: 378,154 hrs
- GPRS model: 403,452 hrs
- WL1 model: 400,469 hrs

**Standard:** Telcordia SR332

## : ioLogik 2542 Specifications

### Inputs and Outputs

**Configurable DIOs (by software):** 12 channels

**Analog Inputs:** 4 channels

**Isolation:** 3k VDC or 2k Vrms

### Digital Input

**Sensor Type:** Wet Contact (NPN or PNP) and Dry Contact

**I/O Mode:** DI or Event Counter

**Dry Contact:**

- On: short to GND
- Off: open

**Wet Contact (DI to COM):**

- On: 10 to 30 VDC
- Off: 0 to 3 VDC

**Common Type:** 6 points per COM

**Counter Frequency:** 2.5 kHz

**Digital Filtering Time Interval:** Software configurable

### Digital Output

**Type:** Sink

**I/O Mode:** DO or Pulse Output

**Pulse Output Frequency:** 5 kHz

**Over-Voltage Protection:** 45 VDC

**Over-Current Protection:** 1.5 A per channel @ 25°C

**Over-Temperature Shutdown:** 175°C (min.)

**Current Rating:** 500 mA per channel @ 25°C

**DIO Output Leakage Current:** < 1 mA @ 30 VDC

### Analog Input

**Type:** Differential input

**Resolution:** 16 bits

**I/O Mode:** Voltage / Current (software selectable)

**Input Range:** ±10 V, 0 to 10 V, 0 to 20 mA, 4 to 20 mA, 4 to 20 mA (burnout detection)

**Accuracy:**

- ±0.1% FSR @ 25°C
- ±0.3% FSR @ -10 and 60°C
- ±0.5% FSR @ -30 and 70°C

**Sampling Rate:**

- All channels: 400 samples/sec
- Per channel: 100 samples/sec

**Input Impedance:** 1M ohms (min.)

**Built-in Resistor for Current Input:** 120 ohms

### Power Requirements

**Input Voltage:** 9 to 48 VDC

**Input Current:**

- HSPA Model: 442 mA @ 24 VDC
- GPRS Model: 494 mA @ 24 VDC
- WL1 Model: 406 mA @ 24 VDC

**MTBF (mean time between failures)**

**Time:**

- HSPA model: 378,154 hrs
- GPRS model: 403,087 hrs
- WL1 model: 331,222 hrs

**Standard:** Telcordia SR332

## : Common Specifications

### Cellular

**Standards:** GSM/GPRS/EDGE/UMTS/HSPA+

**HSPA Model Band Options:**

- UMTS/HSPA+: five-band 800/850/900/1900/2100 MHz
- GSM/GPRS/EDGE: quad-band 850/900/1800/1900 MHz

**GPRS Model Band Options:** GSM/GPRS/EDGE: quad-band 850/900/1800/1900 MHz

**SIM Control Voltage:** 3/1.8 V

**SIM Format:** Full size

### WLAN

**Standards:**

- IEEE 802.11a/b/g for wireless LAN
- IEEE 802.11i for wireless security

**Spread Spectrum and Modulation (typical):**

- DSSS with DBPSK, DQPSK, CCK
- OFDM with BPSK, QPSK, 16QAM, 64QAM
- 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 11 Mbps
- 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps

**Operating Channels (central frequency):**

- US: 2.412 to 2.462 GHz (11 channels), 5.18 to 5.24 GHz (4 channels)
- EU: 2.412 to 2.472 GHz (13 channels), 5.18 to 5.24 GHz (4 channels)

**Security:**

- 64-bit and 128-bit WEP encryption
- Full WPA/WPA2 Personal

**Transmission Rates:**

- 802.11b: 1, 2, 5.5, 11 Mbps
- 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps

**TX Transmit Power:**

- 802.11b: Typ. 18±1.5 dBm @ 1 to 11 Mbps
- 802.11g: Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 17±1.5 dBm @ 36 Mbps, Typ. 16±1.5 dBm @ 48 Mbps, Typ. 16±1.5 dBm @ 54 Mbps
- 802.11a: Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 16±1.5 dBm @ 36 Mbps, Typ. 15±1.5 dBm @ 48 Mbps, Typ. 14±1.5 dBm @ 54 Mbps

**RX Sensitivity:**

- 802.11b: -97 dBm @ 1 Mbps, -94 dBm @ 2 Mbps, -92 dBm @ 5.5 Mbps, -90 dBm @ 11 Mbps
- 802.11g: -88 dBm @ 6 to 24 Mbps, -85 dBm @ 36 Mbps, -75 dBm @ 48 Mbps, -70 dBm @ 54 Mbps
- 802.11a: -88 dBm @ 6 to 24 Mbps, -85 dBm @ 36 Mbps, -75 dBm @ 48 Mbps, -70 dBm @ 54 Mbps

**LAN****Ethernet:**

- 4 switched 10/100 Mbps RJ45 ports
- 1 optimized port for faster downstream communications with daisy-chained ioLogik E1200 units

Note: The optimized daisy-chain port is not supported by the ioLogik E1261W-T, E1261H-T, or E1263H-T.

**Protection:** 1.5 kV magnetic isolation

**Protocols:** Modbus/TCP (slave), TCP/IP, UDP, DHCP, BOOTP, SNMP, HTTP, CGI, SNTP, SMTP

**Serial**

**Interface:** 2 RS-232/422/485 (software selectable) RJ45 ports

**Parity:** None, Odd, Even

**Data Bits:** 5, 6, 7, 8

**Stop Bits:** 1, 2

**Flow Control:** None, RTS/CTS, XON/XOFF

**Baudrate:** 300 to 115200 bps

**Protocols:** Modbus/RTU (master/gateway), serial tunnel mode (client/server)

**Physical Characteristics**

**Wiring:** I/O cable, 14 AWG (max.)

**Dimensions:** 61 x 157 x 115 mm (2.4 x 6.18 x 4.53 in)

**Weight:** Under 1265 g (2.79 lb)

**Mounting:** DIN rail (standard), wall (optional)

**Storage**

**Expansion Slot:** Up to 32 GB microSD™ memory card (SDHC compatible)

Note: For units operating in extreme temperatures, industrial-grade, wide-temperature SD cards are required.

**Environmental Limits****Operating Temperature:**

Standard Models: -10 to 60°C (14 to 140°F)

Wide Temp. Models: -30 to 70°C (-22 to 158°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

**Ambient Relative Humidity:** 5 to 95% (non-condensing)

**Shock:** IEC 60068-2-27

**Vibration:** IEC 60068-2-6

**Altitude:** Up to 2000 m

Note: Please contact Moxa if you require products guaranteed to function properly at higher altitudes.

**Standards and Certifications**

**Safety:** UL 508

**EMC:** EN 55022/24, EN 61000-6-2/6-4

**EMI:** CISPR 22, FCC Part 15B Class A

**EMS:**

IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV

IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m

IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV

IEC 61000-4-5 Surge: Power 2 kV

IEC 61000-4-6 CS: 3 V

IEC 61000-4-8

**Radio:** R&TTE: EN 62311, EN 300 328, EN 301 489-1, EN 301 489-17,

EN 301 893; NCC; VCCI

**Hazardous Location:** Class 1 Division 2; ATEX Zone 2

**Green Product:** RoHS, CRoHS, WEEE

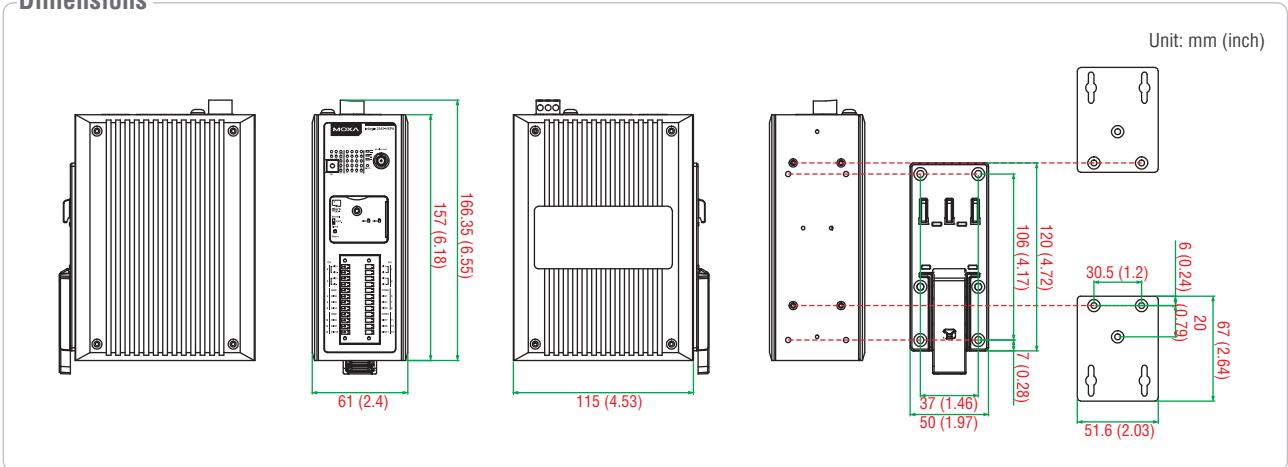
Note: Please check Moxa's website for the most up-to-date certification status.

**Warranty**

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Dimensions



## Ordering Information

### Available Models

**ioLogik 2512-GPRS:** Smart GPRS remote I/O with Click&Go Plus, 8 DIs, 8 DIOs, -10 to 60°C operating temperature

**ioLogik 2512-GPRS-T:** Smart GPRS remote I/O with Click&Go Plus, 8 DIs, 8 DIOs, -30 to 70°C operating temperature

**ioLogik 2512-HSPA:** Smart HSPA remote I/O with Click&Go Plus, 8 DIs, 8 DIOs, -10 to 60°C operating temperature

**ioLogik 2512-HSPA-T:** Smart HSPA remote I/O with Click&Go Plus, 8 DIs, 8 DIOs, -30 to 70°C operating temperature

**ioLogik 2512-WL1:** Smart WLAN remote I/O with Click&Go Plus, 8 DIs, 8 DIOs, -10 to 60°C operating temperature

**ioLogik 2512-WL1-T:** Smart WLAN remote I/O with Click&Go Plus, 8 DIs, 8 DIOs, -30 to 70°C operating temperature

**ioLogik 2542-GPRS:** Smart GPRS remote I/O with Click&Go Plus, 12 DIOs, 4 AIs, -10 to 60°C operating temperature

**ioLogik 2542-GPRS-T:** Smart GPRS remote I/O with Click&Go Plus, 12 DIOs, 4 AIs, -30 to 70°C operating temperature

**ioLogik 2542-HSPA:** Smart HSPA remote I/O with Click&Go Plus, 12 DIOs, 4 AIs, -10 to 60°C operating temperature

**ioLogik 2542-HSPA-T:** Smart HSPA remote I/O with Click&Go Plus, 12 DIOs, 4 AIs, -30 to 70°C operating temperature

**ioLogik 2542-WL1:** Smart WLAN remote I/O with Click&Go Plus, 12 DIOs, 4 AIs, -10 to 60°C operating temperature

**ioLogik 2542-WL1-T:** Smart WLAN remote I/O with Click&Go Plus, 12 DIOs, 4 AIs, -30 to 70°C operating temperature

**Optional Accessories** (can be purchased separately)

**WK-51-01:** DIN-rail/wall-mounting kit, 2 plates with 6 screws

### Package Checklist

- ioLogik 2500
- RJ45-to-DB9 connection cables x 2
- Antennas x 1
- Hardware installation guide