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.

MOXA®

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
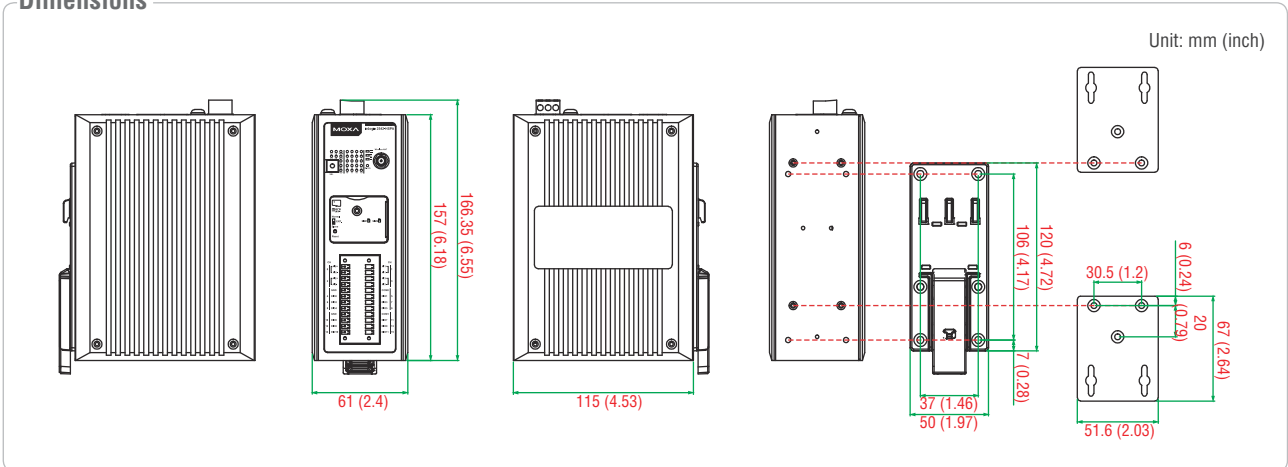**Green Product:** RoHS, CRoHS, WEEE
Note: Please check Moxa's website for the most up-to-date certification status.

Warranty
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions

Unit: mm (inch)

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