

i-3[®] Control Technology V2

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General information:

1. What features are new in this latest version of i-3?

- Better noise filters to improve communications reliability.
- New BACnet MSTP protocol I/O controller.
- Modbus TCP/IP as an option on the I/O Modbus controller.
- Upgraded the System controller from monochromatic to color screen.
- Modified the controller mounting for easy removal and installation.
- Surge protection circuitry inside the controllers
- 24 VDC support for wet contacts and analog inputs, such as light sensors.
- Repositioned the battery for easy replacement.

Documentation:

2. What documentation exists for i-3® Control Technology V2 and where can it be located?

The documentation available is listed below:

- i-3® Control Technology V2 Selection & Application Guide
- i-3® Control Technology V2 Submittal Guide
- i-3® Control Technology V2 System Controller, User Guide
- i-3® Control Technology V2 I/O Controller – Modbus, User Guide
- i-3® Control Technology V2 I/O Controller – BACnet, User Guide
- i-3® Control Technology V2 Control Technology, Instruction Manual
- Installation Guide

In addition to the above you can also find and download:

- Cut sheets
- The configuration software packages.
- Energy Savings Calculator
- Configuration forms

All can be found on the lighting controls website: <http://www.usa.siemens.com/i-3>

3. Where can I locate competitive comparison data?

The information is in the attached file.

4. Is there any sales training available for SENTRON i-3?

Training classes are scheduled for 2012 in Norcross. For classes schedules and descriptions, contact your closest SIEMENS Sales Office

5. What CSI specifications exist?

Where are they located?

Yes, Please contact your closest SIEMENS Sales Office to obtain a copy.

Commissioning, maintenance, and support:

6. Who can I contact for technical and sales support?

For technical support, call 1-800-333-7421
For pre-sales support contact your closest Siemens Sales Office

7. How much does Siemens Startup service cost?

For start up/commissioning cost, please Contact your closest Siemens Sales Office

The price is calculated with the software tool that can be found in the Lighting Controls folder in SharePoint:

<https://workspace.automation.sea.siemens.com/division/PPandC/communities/eabu/ProdMgmt/User%20Library/Forms/AllItems.aspx>

Take the Zip file "i-3 Commissioning Pricing.zip" and save it. Then extract the two files into one folder (you need both files in the same folder in order to run the tool). To open the tool double click on file "i-3 Service Pricing.exe".

8. How much does the commissioning/configuration software cost?

The commissioning software is provided free of charge. It can be obtained from the i-3® Control Technology V2 Web page: www.usa.siemens.com/i-3

9. Does the i-3® Control Technology V2 quote include commissioning?

Yes, the quote you received from your Siemens Sales Engineer includes the cost of startup services by Siemens.

10. Is the commissioning software available to i-3® Control Technology V2 users?

Yes, the commissioning software is available, free of charge, on the i-3® Control Technology V2 Web page: www.sea.siemens.com/i-3

11. What is the standard warranty for i-3® Control Technology V2?

i-3® Control Technology V2 is backed by Siemens standard warranty: 18 months after shipping or 12 months after commissioning, whichever comes first.

12. Will the system still function if a SIPOD fails? If breaker fails?

Yes, the system will still function if a SIPOD fails. One exclusive feature that we have over our competitors is our modular design. If a SIPOD fails, it can be removed. Although that particular circuit can not be controlled remotely it can still be switched manually until a replacement SIPOD arrives. This eliminates system downtime and reduces the user's replacement costs because he/she only has to replace the defective part. If a breaker fails, the system will need a replacement breaker. However, since the BQD is a standard off-the-shelf item, the part lead time and system downtime will be minimal.

13. How can the USB port be used to help with commissioning and support?

If the user needs help with an i-3® Control Technology V2 System Controller (master or its EIB slave panels), he/she can load the system configuration files on a USB flash drive, upload the files to a PC and send an email to i-3® Control Technology V2 technical support with the files attached describing their issues. Technical support can then review, modify, and test the file and send it back. This reduces the user's downtime and costs associated with covering travel expenses.

Demo kits:

14. Does Siemens have demonstrator i-3 panels?

Yes, the i-3® Control Technology V2 System Controller demo kit includes a System Controller, 3 one pole SIPODs, and one 2 pole SIPOD with their BQD breakers, a power cord and 4 LED lights for live demonstrations. The Demo kit allows SIPODs to be switched On/Off via the touch screen. Output zones and I/O mappings can also be created. Four SIPODs are provided with the kit, to highlight that our modular system design can incorporate mix and match applications and to emphasize system maintenance as it relates to SIPOD and breaker replacement.

15. Are demo units fully functional?

Yes, i-3® Control Technology V2 System Controller demo units are fully functional. They are built and equipped as described above.

16. Will demo kits become available for sale?

No; at this time they are only for SIEMENS Sales and Marketing persons use for demonstrations to potential customers.

System:

17. Will i-3® Control Technology V2 replace LCP3000EZ?

No, i-3® Control Technology V2 will not replace LCP3000EZ. i-3® Control Technology V2 is an extension of the lighting control product portfolio. LCP3000EZ will still be sold and supported. LCP3000EZ is a relay solution, while i-3® Control Technology V2 is a "controllable breaker" solution.

18. What are the system operating conditions?

The system operating conditions are as follows: Operating temperature: 23 °F... 54°F above 104 °F ambient (-5 °C...40°C). Ambient non-operating temperature: -13 °F...158 °F (-25 °C...70 °C)

19. What is the maximum panel amp rating?

The i-3® Control Technology V2 panel has a maximum 250 Amp bus rating.

20. Is TVSS available with i-3® Control Technology V2?

Yes, TVSS is available with i-3® Control Technology V2, but it cannot be installed within the i-3® Control Technology V2 panel. However, it can be mounted externally.

21. Can feed thru lugs or sub feed breakers be used?

No, feed thru lugs or sub feed breakers cannot be used with i-3® Control Technology V2.

22. Can i-3® Control Technology V2 be installed in existing panels?

Yes, a P1 interior with i-3® Control Technology V2 can be swapped with the standard interior in existing P1, S1 or S2 SIEMENS panelboards; if the box is of the same size

23. Is the system UL listed?

Yes, the i-3® Control Technology V2 system is listed to cULus 916 Energy Management Equipment. The panel is listed to UL or cUL 67 Panels and the enclosures are listed to UL or cUL 50 Enclosures.

24. Is the system Title 24 certified?

Yes, i-3® Control Technology V2 is Title 24 certified.

25. Can the system be password protected?

Yes, the system can be password protected. Passwords are associated with three fixed access levels defined for the i-3® Control Technology V2 system controller: System Administrator, Facility Manager, and User. The access level determines to which screens and to what programming changes or overrides the user has access.

- The system administrator has the highest access level and has access to all screens.
- The facility manager has access to the Status Menu and the Override Screens.
- The User only has access only to the Status Screen.

For additional information about the menu screens review the system controller section of this document.

26. i-3® Control Technology V2 is available for P1 panels; will i-3® Control Technology V2 become available for other panels?

Extending i-3® Control Technology V2 to other panels has been considered and it is in the road map. Please stay tuned for future development updates.

27. Who is currently using the i-3® Control Technology V2 system?

i-3 V2 is new to the market, it is the second generation of the i-3 Lighting Control systems; therefore it is not in wide use as of yet. However, there are several retail national accounts that are currently using the i-3® Control Technology system; as well as many car dealers, warehouses and institutional buildings.

Controllable breakers:

28. How does our breaker/SIPOD switching compare to typical remote operated breakers?

The SIPODs switch ON/OFF via a maglatch mechanism. The maglatch mechanism is designed to hold and actuate between two states. This bi-stable operation is achieved with the use of a solenoid, a permanent magnet, and a spring. Unlike motor driven mechanisms that are used by GE and Square D that are prone to high inrush currents, slippage, failure, and loud noise due to operation of the DC motor, our maglatch mechanism is low power requiring approximately 1.7A @ 24VDC for 2-25 milliseconds, provides rapid operation that breaks continuity in less than 4.5 milliseconds, provides longer mechanical life of more than half a million ON/OFF/ON cycles at full load, and is quiet where the only noise is the sound of the contacts striking. Most of our competitors have their contacts rated at 300,000 or less ON/OFF/ON cycles (with no load).

29. Is there a 3-pole SIPOD available?

Currently, there is no 3-pole SIPOD available. Demand for a 3 pole device is very low.

30. Is there a 30 Amp SIPOD available?

Yes, the 30 Amp SIPOD in the future, it will replace the 20 Amp device; it is rated as "30 Amp Max". It can be coupled to 15, 20, 25 and 30 Amp BQD breakers.

31. Does the breaker/SIPOD combination have a manual override?

Yes, the SIPOD does have a manual override. This override forces the main contacts in the SIPOD from the open position to the closed position. This feature allows electrical loads to be tested prior to configuring the lighting control system which can be useful during installation and commissioning. After the override lever is rotated to the closed position, the SIPOD contacts are closed until the SIPOD receives a remote signal from the controller. There is no electrical feedback associated with the manual override.

After the SIPODs contacts are closed with the manual override; power to the circuit can be controlled with the BQD circuit breaker toggle.

32. Explain the SIPOD "blow-closed" mechanism.

The blow closed mechanism is designed to keep the SIPOD contacts closed during short circuit and overload conditions.

This is achieved by using a compression spring, a steel yoke and armature that function as a magnet, and two parallel conductors. During normal operation, the spring provides the force

Figure 1



	System Controller	EIB I/O Controller	Modbus I/O Controller	BACnet I/O Controller
Touch Screen	Yes	No	No	No
USB Interface	Yes	No	No	No
RS485 Interface	Yes	No	Yes	Yes
IP Interface	Yes	No	Yes (Optional)	No
Master to I/O Controllers	Yes	No	No	No
Slave to BAS	Yes	No	Yes	Yes
Slave to System Controller	No	Yes	No	No
Built in clock	Yes	No	No	No
Schedules	Yes	No	No	No
Holidays	Yes	No	No	No
I/O mapping	Yes	Yes	Yes	Yes
Logic (AND, OR, XOR, NAND)	Yes	Yes	Yes	Yes

required to maintain the contacts in the open or closed position which also prevents the SIPOD contacts from separating. During substantially high current levels, the two parallel conductors produce a non-saturating force that is proportional to the square of the current that combine with the forces produced by the spring and magnet that keep the contacts closed.

33. What is the KA rating of the breaker/ SIPOD combination?

Since the SIPOD is a listed UL 489 circuit breaker accessory; it assumes the short circuit current rating of the attached BQD breaker, the BQD breaker/SIPOD combination has the same KA rating as a standard BQD breaker (65 KA @ 240 V and 14 KA @ 277 V)

34. What branch breakers are controllable?

All controlled circuits are made by combining a BQD thermal magnetic circuit breaker with a SIPOD. BL breakers can be used for 240V applications involving non-controlled points, but can not be coupled with a SIPOD. Note: the SIPOD is built to match electrically and mechanically, only with the BQD circuit breaker.

35. Can the panel be series rated?

Yes, the i-3® Control Technology V2 panel can be series rated. SPACE and COMPAS fully support series rating for the BQD-SIPOD combination, which is the same as for the BQD breaker alone.

36. Does the SIPOD have a zero cross design?

No the SIPOD does not have a zero cross design. The oversized SIPOD contacts do not need to have the zero cross capability.

Zero cross is a technology where the contacts wait to open or close until the voltage in the load is basically zero. With Zero cross capability a manufacturer can use smaller contacts. The trade-off is that sensors are needed in the device to detect the zero cross voltage, which increases cost, but also affects the reliability negatively.

Controllers:

37. What is the difference between the I/O controllers and System Controller? (see Figure 1, above)

The main differences as well as shared features between the I/O controllers and System Controller are listed on the table below. Also note that there are three versions of I/O controllers.

- EIB version: This I/O controller is designed to be only slave to a system controller. The EIB I/O controller can not be installed "stand alone" or have a Modbus or BACnet BAS as master.
- Modbus version: This I/O controller is designed to be slave to Building Automation System (BAS) via Modbus RTU or TCP/IP with an optional card. It can not be slave to a system controller. It can be installed as "stand alone" on the very isolated cases when schedules are not required and the controller will receive only digital inputs.
- BACnet version: This I/O controller is designed to be slave to Building Automation System (BAS) via BACnet MS/TP. It can not be slave to a system controller. It can be installed as "stand alone" on the very isolated cases when schedules are not required and the controller will receive only digital inputs.

38. How many schedules can be created with the System Controller?

A total of 275 events can be set. It is a combination of Schedules and events; The number of schedules multiplied by the number of events, should not exceed 275.

39. How many zones can be created?

124 zones breaker combinations/panel. The number of zones that can be created depend on the number of breakers per zone. Contact technical support with questions regarding zone configurations.

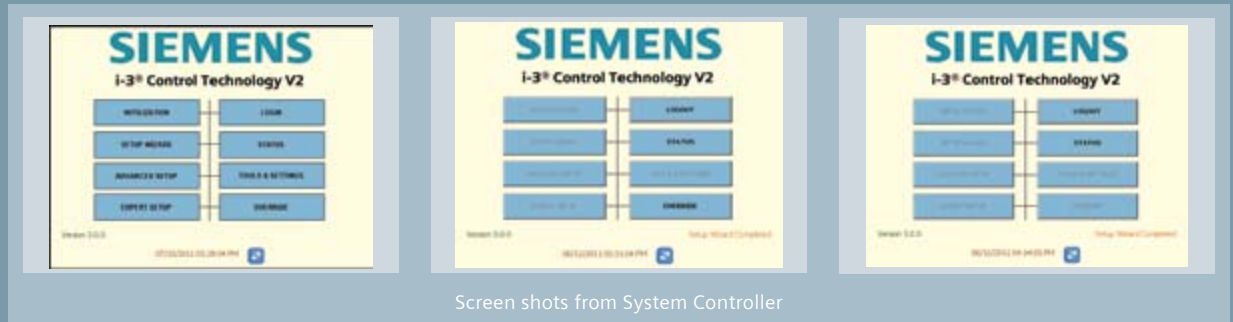
Examples:

- Case 1:
 - Configure 10 zones (zone 1 – 5 have 8 breakers each; zones 6 – 10 have 3 breakers each);
 - Add the number of breakers in each zone to obtain the number of entries used to configure the 10 zones ($5 \times 8 + 5 \times 3 = 55$ entries)
 - Subtract the 55 entries from 124; this leaves room for 69 additional entries.
- Case 2:
 - Configure 25 zones (zone 1 – 10 have 4 breakers each; zones 11 – 18 have 3 breakers each; zones 19 – 24 have 5 breakers each and zone 25 has 10 breakers);
 - Add the number of breakers in each zone to obtain the number of entries used to configure the 25 zones ($10 \times 4 + 8 \times 3 + 5 \times 5 + 4 \times 2 + 10 = 107$ entries)
 - Subtract the 107 entries from 124; this leaves room for 17 additional entries.
- Case 3:
 - Configure 25 zones (zone 1 – 5 have 8 breakers each; zones 6 – 10 have 3 breakers each; zones 11 – 20 have 6 breakers each; zones 21 – 24 have 5 breakers each and zone 25 has 10 breakers);
 - Add the number of breakers in each zone to obtain the number of entries used to configure the 25 zones ($5 \times 8 + 5 \times 3 + 10 \times 6 + 4 \times 5 + 10 = 145$ entries)
 - Subtract the 145 entries from 124; this gives a negative 21; you have exceeded the number of entries allowed for this panel.

40. How many holidays can be created (System Controller)?

An unlimited number of holidays can be created.

Figure 2



Screen shots from System Controller

41. How many inputs are available?

i-3[®] Control Technology V2 controllers provide connections for up to 20 2-wire digital inputs or 10 3-wire dry or wet digital inputs (wet contacts with voltage up to 24 VDC) i-3[®] Control Technology V2 controllers also have two analog inputs and two analog outputs for dimming 0-10 Volts fluorescent lights.

42. Do i-3[®] Control Technology V2 controllers supply power for sensors that require external power?

Yes, i-3[®] Control Technology V2 controllers provide 24 VDC (120 mA) to power sensors that require external power; i.e.: light sensors, motion sensors.

43. What is the function of the USB port in the System Controller?

The USB port in the System Controller allows the user to upload or download panel/system configuration files and firmware updates. This feature will ease the installation, commissioning, and support of i-3[®] Control Technology V2 systems. In the event of a configuration issue; the configuration files can be downloaded to a USB flash drive and uploaded to a computer. The user can then send an e-mail to i-3[®] Control Technology V2 technical support with the file attached to it. This will reduce the downtime customer and reduce the travel costs associated with technical assistance.

44. What are the functions of the major setup categories on the System Controller screen?

There are eight major setup categories: initialization, login/logout, setup wizard, status, advanced setup, and tools and overrides. (see Figure 2)

- **Initialization:** allows the user to specify the screen orientation, language, date and time, location (Longitude and Latitude), and password.

- **Setup wizard:** allows the user to setup and detect panels, breakers, inputs, zones, I/O mappings, and schedules.

- **Login:** requires the use of a 4 digit password that is tied to access levels that determines to which screen a user will have access.

- **Status:** allows the user to check whether breakers and inputs are ON or OFF. It also allows the user to view the schedules that have been created. An additional feature under STATUS is the ability to override (turn ON or OFF) individual breakers or zones.

- **Advanced setup:** allows the user to add, modify, or delete panels, breakers, inputs, zones, I/O mappings, and schedules that were created during the Setup Wizard.

- **Tools and Settings:** allows the user to create holiday schedule overrides, view the breaker statistics, the commissioning report, and recent activities. Set up Modbus communications parameters, etc

- **Export Setup:** allows the user to: import/export system configuration through the USB port, set passwords, set communications logic, configure EIB devices, etc.

- **Override:** it allows the user to override breakers and zones

45. What happens to the system in the event of a power outage?

In the event of a power outage, the factory installed backup battery in the controller will maintain the time and date in system clock for at least for one year. The battery is a lithium coin cell (Panasonic BR1225 or similar) with a 10-year shelf life. The configuration program is stored in non-volatile memory; therefore, it is not affected by a power outage.

46. What information is provided with the SIPOD (breaker) statistics (System Controller)?

The breaker statistics sub-Menu allows the user to see the number of times a breaker has opened and closed, the number of failures from a mechanical standpoint and from a communication standpoint (garble). A garble is a communication error that occurs when the I/O board is unable to understand a command that is received from a particular SIPOD.

47. What features are located under the Tools and Override section of the System Controller?

The Tools and Settings section of the system controller is used, check breaker statistics, view the commissioning and recent activities report, create holidays, modify Modbus settings, modify the global settings such as the date and time format and set the maximum number of characters allowed for names, and set a system reboot time, if required.

48. How are the Modbus and BACnet I/O Controllers configured?

The Modbus and BACnet I/O Controller are configured using the i-3[®] Control Technology V2 Panel Configurator Software which is a Windows based application that provides intuitive screens that allow the user to easily configure the i-3[®] Control Technology V2 panel.

This configuration tool provides an accurate graphical panel layout that allows the user to check the status of breakers, inputs, and zones. This tool also allows users to configure zones and create I/O mappings. There is an "Upload to Panel" feature that allows a single panel configurations to be used to program several panels. The i-3[®] Control Technology V2 I-O off line configuration software can be downloaded free of charge from the i-3[®] Control Technology V2 Web page: www.usa.siemens.com/i-3

Figure 3

To be updated when new software is available



49. How is the EIB I/O Controller configured?
The EIB I/O Controller is configured through the same tools that are used to configure the System Controller. Since the EIB I/O controller is always slave to a system controller; all the programming is done through the system controller.

50. How is the System Controller configured?
The system controller can be configured in several ways. The most direct way is using the setup wizards on the system controller touch screen. Another option is to use an off-line configurator that provides the graphical interface as on a PC. The configuration files can then be downloaded on a USB flash drive and uploaded to the panel using USB port. The system controller can also be configured by manipulating Modbus maps.

The i-3® Control Technology V2 System Controller off line configuration software can be downloaded free of charge from the i-3® Control Technology V2 Web page: www.usa.siemens.com/i-3

Communication:

51. What communication protocols are supported by i-3® Control Technology V2?

- The System Controller can communicate to a BAS through Modbus RTU or TCP/IP and dry contacts.
- The EIB I/O controller communicates only with the system controller through EIB communications protocol; it can also receive commands via dry contacts.
- The Modbus and BACnet I/O controllers can communicate to a BAS via Modbus RTU (TCP/IP optional on Modbus I/O controller), and dry contacts.

52. What are the networking capabilities of i-3® Control Technology V2?

- The System controller can be networked with up to 7 EIB I/O Controllers. This network should be wired with 18 AWG, solid copper twisted pair wire; such as Belden 6320. The total wire length should not exceed 3300 ft (1000 meters).
- The system controller can also be networked with a BAS through Modbus RTU or TCP/IP (over a building LAN). In this case a maximum of 1976 controllers can be in a network (247 system controllers plus a maximum of 7 EIB I/O controllers connected as slaves of each system controller)
- Up to 247 Modbus I/O controllers can be connected in a network using Modbus RS485 or TCO/IP with an optional card. The network must follow the Modbus communications protocol rules, that is, the 247 controllers have to be connected in loops of no more than 32 controllers per loop. The cable length can have a length no greater than 3300 ft (1000 meters). 18 gauge twisted pair wire should be used.

53. What is the cable type and length limitation for networking panels via Modbus RS485?

18 gauge twisted pair wire should be used. The cable length should be no greater than 3300 ft (1000 meters).

54. What is the cable type and length limitation for networking panels via Modbus TCP/IP?

CAT5 or CAT6 cable can be used; Total length can not exceed 650 feet (200 meters).

55. What is the cable type and length limitation for networking panels via BACnet RS485?

18 gauge twisted pair wire should be used. The cable length should be no greater than 3300 ft (1000 meters).

56. What is the cable type length limitation for networking system controllers with EIB I/O controllers?

18 AWG, solid copper twisted pair wire; such as Belden 6320. The total wire length should not exceed 3300 ft (1000 meters). This is cable length, not distance. To calculate total cable length add all the pieces of cable in the network and that is total cable length to be considered.

57. Can customers access their systems remotely?

The system can be accessed remotely via Modbus when connected to a Modbus BAS master. Or a Web interface which will allow system access online via the user's own LAN. This is an option for those customers who need to purchase it.

58. Can i-3® Control Technology V2 communicate on a LAN?

Yes, the system controller can communicate on a LAN using its Ethernet Port. The communication protocol that is used is Modbus TCP/IP. The Modbus I/O controller can also communicate on a LAN using its optional Ethernet Port card.

59. Can i-3® Control Technology V2 communicate via internet?

Yes, a dedicated LAN software needs to be installed on the computer that is used to communicate with i-3. The cable is a standard CTA5e or CAT6.

60. What type of wire is recommended for wiring inputs to the controller?

18 AWG stranded copper wire.

Siemens Industry, Inc.
5400 Triangle Parkway
Norcross, GA 30092
1-800-241-4453

info.us@siemens.com

www.usa.siemens.com/i-3

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