Selection Guide

ControlLogix System

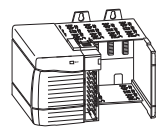Catalog Numbers 1756 Series

1756 ControlLogix I/O Modules
1756 ControlLogix Integrated Motion
1756 ControlLogix Communication Modules
1756 ControlLogix Controllers
1756 ControlLogix Chassis
1756 ControlLogix Power Supplies

Allen-Bradley • Rockwell Software

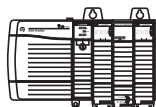**Rockwell Automation**

Logix Controllers Comparison

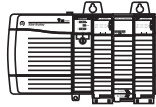| Characteristic	1756 ControlLogix	1756 GuardLogix	1768 CompactLogix	1768 Compact GuardLogix	1769-L3x CompactLogix	1769-L23x CompactLogix	1789 SoftLogix5800
Controller tasks: • Continuous • Periodic • Event	• 32 tasks • 100 programs/task • Event tasks: all event triggers	• 32 tasks • 100 programs/task • Event tasks: all event triggers	• 16 tasks • Event tasks: consumed tag, EVENT instruction, axis, and motion event triggers	• 16 tasks • Event tasks: consumed tag, EVENT instruction, axis, and motion event triggers	• 1769-L35x: 8 tasks • 1769-L32x: 6 tasks • 1769-L31: 4 tasks • Event tasks: consumed tag and EVENT instruction triggers	• 3 tasks • 16 programs/task • Event tasks: consumed tag and EVENT instruction triggers	• 32 tasks • 100 programs/task • Event tasks: all event triggers, plus outbound and Windows events
User memory	1756-L61: 2 MB 1756-L62: 4 MB 1756-L63: 8 MB 1756-L64: 16 MB 1756-L65: 32 MB 1756-L72: 4 MB 1756-L73: 8 MB 1756-L74: 16 MB 1756-L75: 32 MB	1756-L61S: 2 MB Standard 1 MB Safety 1756-L62S: 4 MB Standard 1 MB Safety 1756-L63S: 8 MB Standard 3.75 MB Safety	1768-L43: 2 MB 1768-L45: 3 MB	1768-L43S: 2 MB Standard 0.5 MB Safety 1768-L45S: 3 MB Standard 1 MB Safety	1769-L31: 512 KB 1769-L32x: 750 KB 1769-L35x: 1.5 MB	512 KB	1789-L10: 2 MB; 1 controller; no motion 1789-L30: 64 MB; 3 controllers 1789-L60: 64 MB; 6 controllers
Nonvolatile user memory	1756-L6x: CompactFlash 1756-L7x: Secure Digital card	CompactFlash	CompactFlash	CompactFlash	CompactFlash	None	None
Built-in communication ports	1756-L6x: 1 port RS-232 serial 1756-L7x: 1 port USB	1 port RS-232 serial	1 port RS-232 serial	1 port RS-232 serial	• 1769-L31: 2 RS-232 ports • 1769-L32C, 1769-L35CR: 1 ControlNet port and 1 RS-232 serial port • 1769-L32E, 1769-L35E: 1 EtherNet/IP port and 1 RS-232 serial port	• 1769-L23E-QB1B: 1 EtherNet/IP port and 1 RS-232 serial port • 1769-L23E-QBFC1B: 1 EtherNet/IP port and 1 RS-232 serial port • 1769-L23-QBFC1B: 2 RS-232 serial ports	Depends on personal computer
Communication options	• EtherNet/IP • ControlNet • DeviceNet • Data Highway Plus • Remote I/O • SynchLink	• EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard and safety) • Data Highway Plus • Remote I/O • SynchLink	• EtherNet/IP • ControlNet • DeviceNet	• EtherNet/IP (standard and safety) • ControlNet (standard and safety) • DeviceNet (standard)	• EtherNet/IP • ControlNet • DeviceNet	• EtherNet/IP • DeviceNet	• EtherNet/IP • ControlNet • DeviceNet
Controller connections	1756-L6x: 250 1756-L7x: 500	250	250	250	100	100	250
Network connections	Per network module: • 100 ControlNet (CN2/A) • 40 ControlNet (CNB) • 256 EtherNet/IP; 128 TCP (EN2x) • 128 EtherNet/IP; 64 TCP (ENBT)	Per network module: • 100 ControlNet (CN2/A) • 40 ControlNet (CNB) • 256 EtherNet/IP; 128 TCP (EN2x) • 128 EtherNet/IP; 64 TCP (ENBT)	Per network module: • 48 ControlNet • 128 EtherNet/IP; 64 TCP	Per network module: • 48 ControlNet • 128 EtherNet/IP; 64 TCP	Per controller: • 32 ControlNet • 32 EtherNet/IP; 32 TCP	Per controller: • 32 EtherNet/IP; 8 TCP	Per network module: • 48 ControlNet • 128 EtherNet/IP; 64 TCP
Controller redundancy	Full support	None	Backup via DeviceNet	Backup via DeviceNet	Backup via DeviceNet	Backup via DeviceNet	N/A
Simple motion	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive	• Stepper • Servo via DeviceNet • Analog or networked AC drive
Integrated motion	EtherNet/IP SERCOS interface Analog options: • Encoder input • LDT input • SSI input	EtherNet/IP SERCOS interface Analog options: • Encoder input • LDT input • SSI input	SERCOS interface	SERCOS interface	N/A	N/A	SERCOS interface Analog encoder input
Programming languages	• Relay ladder • Structured text • Function block • Sequential function chart	• Standard task: all languages • Safety task: relay ladder, safety application instructions	• Relay ladder • Structured text • Function block • Sequential function chart	• Standard task: all languages • Safety task: relay ladder, safety application instructions	• Relay ladder • Structured text • Function block • Sequential function chart	• Relay ladder • Structured text • Function block • Sequential function chart	• Relay ladder • Structured text • Function block • Sequential function chart • External routines (developed in C/C++)

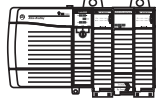**1756 ControlLogix System**

Step 1
ControlLogix I/O Modules

Page 8

Select:
- I/O modules - some modules have field-side diagnostics, electronic fusing, or individually isolated inputs/outputs
- A remote terminal block (RTB) or wiring system for each I/O module
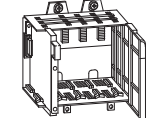
Step 2
ControlLogix Integrated Motion

Page 15

Select:
- A SERCOS or analog interface module
- Associated cables
- A removable terminal block (RTB) - only for analog interface modules
- Select drives, motors, and accessories (use the Motion Analyzer software)

Step 3
ControlLogix Communication Modules

Page 18

Select:
- Networks
- Communication modules
- Associated cables and network equipment
- Sufficient modules and cables if you are planning a redundant system

Step 4
ControlLogix Controllers

Page 27

Select:
- A controller with sufficient memory
- Secure Digital or CompactFlash card
- Replacement batteries, if needed

Step 5
ControlLogix Chassis

Page 32

Select:
- A chassis with sufficient slots
- Slot fillers for empty slots

Step 6
ControlLogix Power Supplies

Page 34

Select:
- One power supply for each chassis, if you are using standard power supplies
- A power supply bundle if you are planning a redundant power supply system

Optional Step
Visualization Products

Page 35

Optional Step
Programming Software

Page 36

ControlLogix System Overview

The ControlLogix system provides discrete, drives, motion, process, and safety control together with communication and state-of-the-art I/O in a small, cost-competitive package. The system is modular, so you can design, build, and modify it efficiently with significant savings in training and engineering.

Example Configuration - ControlLogix System

A simple ControlLogix system consists of a standalone controller and I/O modules in a single chassis. For a more comprehensive system, use the following:

- Multiple controllers in a single chassis
- Multiple controllers joined across networks
- I/O in multiple platforms that are distributed in many locations and connected over multiple I/O links
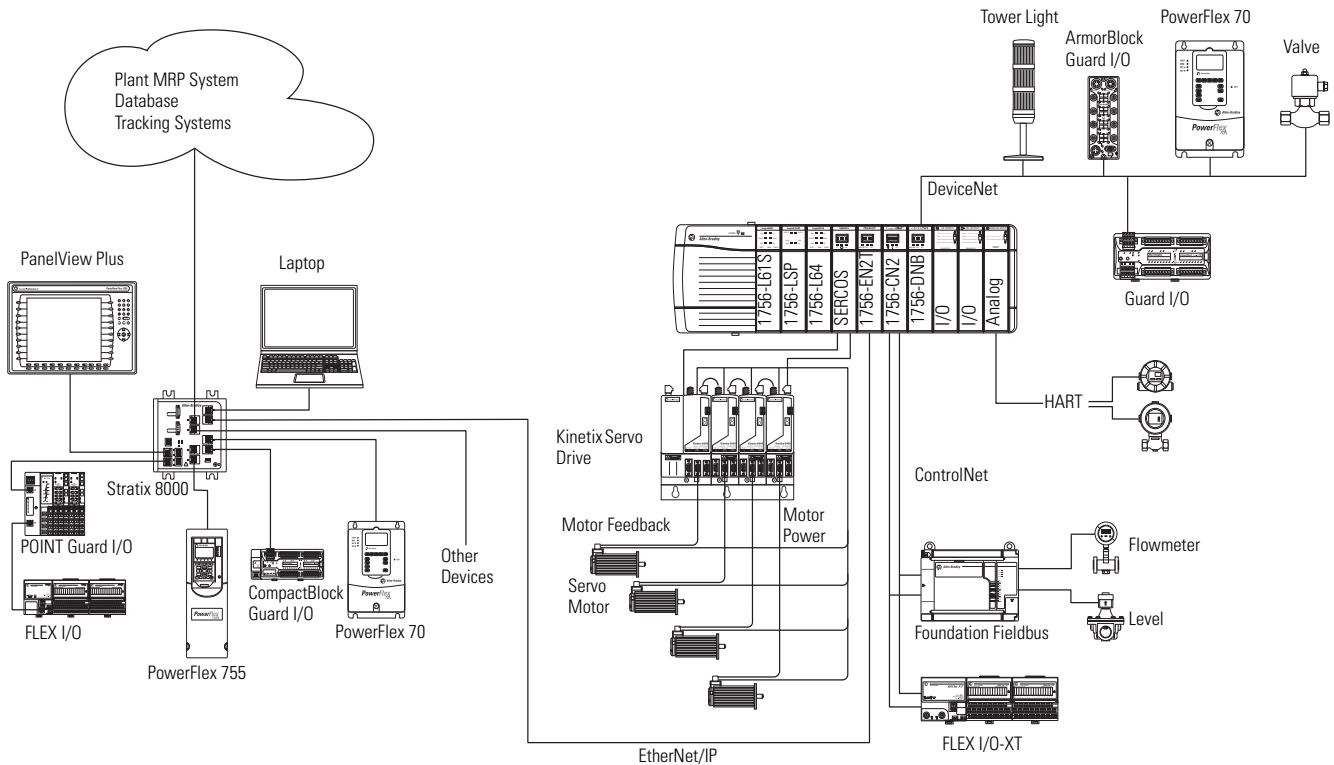
ControlLogix-XT System

The ControlLogix-XT controllers function in the same way as the traditional ControlLogix controllers. The ControlLogix-XT products include control and communication system components that are conformally coated to extend product life in harsh, corrosive environments.

- When used with FLEX I/O-XT products, the ControlLogix-XT system can withstand temperatures range from -20...70 °C (-4...158 °F).
- When used independently, the ControlLogix-XT system can withstand temperature ranges from -25...70 °C (-13...158 °F).
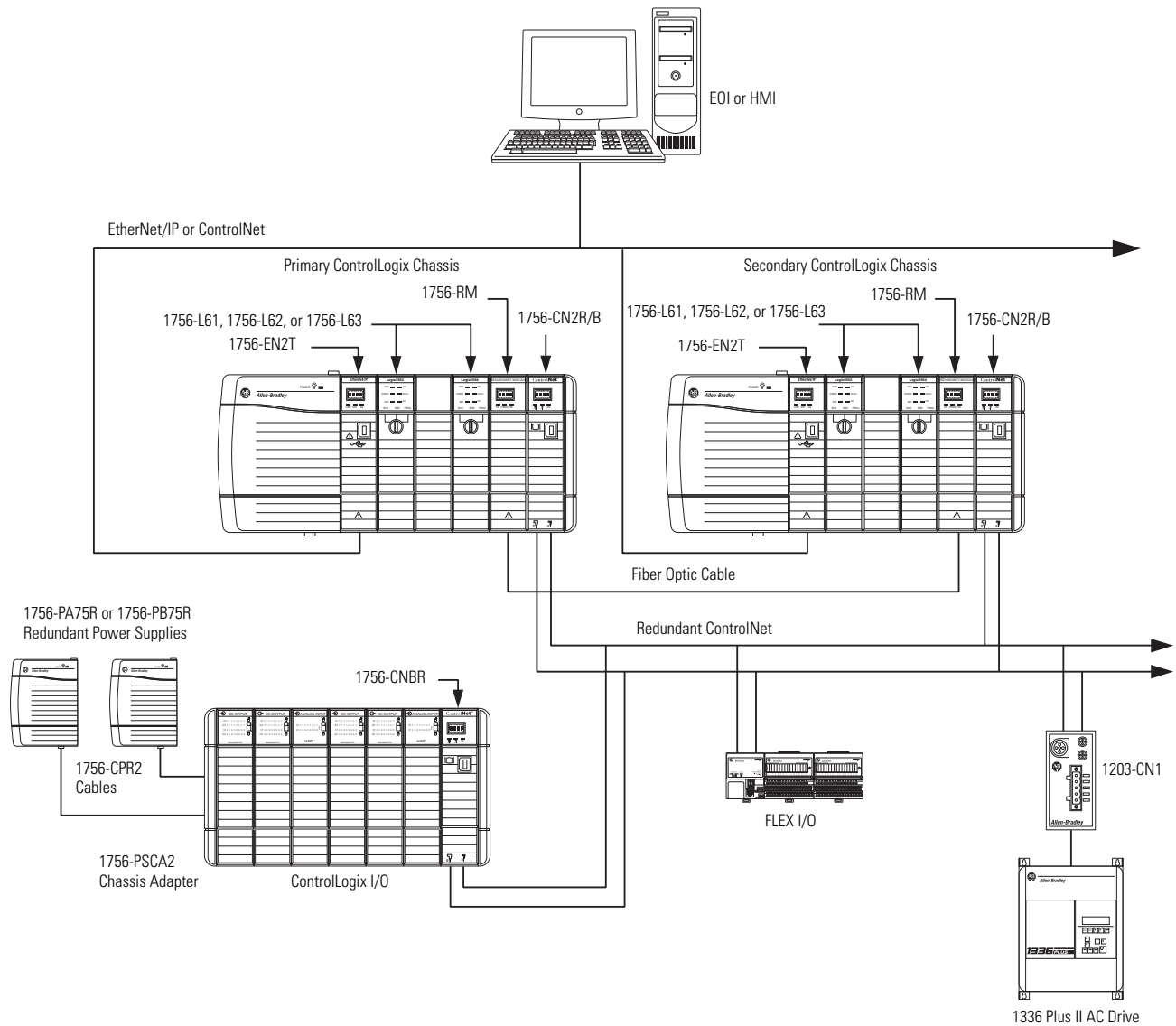
GuardLogix Safety System

A GuardLogix controller is a ControlLogix controller that also provides safety control. The GuardLogix system is a dual controller solution — you must use a 1756-L6xS primary controller and a 1756-LSP safety partner to achieve SIL 3/CAT. 4. A major benefit of this system is that it's still a single project, safety and standard together. The safety partner controller is a part of the system, is automatically configured, and requires no user setup.

Application	Description
SIL 3	The GuardLogix controller system is type-approved and certified for use in safety applications up to and including SIL 3 according to IEC 61508, and applications up to and including category (CAT) 4, according to EN954-1. For more information, see the following: • GuardLogix Controllers Systems Safety Reference Manual, publication 1756-RM093 • GuardLogix Controllers User Manual, publication 1756-UM020 • GuardLogix Safety Application Instruction Set Reference Manual, publication 1756-RM095
SIL 2	Components of the ControlLogix system are type-approved and certified for use in SIL 2 applications, according to IEC 61508, and AK4 applications according to DIN V19250. For a list of ControlLogix system components that meet SIL 2 requirements, see Using ControlLogix in SIL 2 Applications Safety Reference Manual, publication 1756-RM001

Example Configuration - Redundant ControlLogix System

The ControlLogix controller supports controller redundancy.

EOI or HMI

EtherNet/IP or ControlNet

Primary ControlLogix Chassis

1756-RM

1756-L61, 1756-L62, or 1756-L63

1756-CN2R/B

1756-EN2T

Secondary ControlLogix Chassis

1756-RM

1756-L61, 1756-L62, or 1756-L63

1756-CN2R/B

1756-EN2T

Fiber Optic Cable

1756-PA75R or 1756-PB75R
Redundant Power Supplies

Redundant ControlNet

1756-CNBR

1756-CPR2
Cables

1203-CN1

FLEX I/O

1756-PSCA2
Chassis Adapter

ControlLogix I/O

1336 Plus II AC Drive

Example Configuration - Redundant I/O System

The 1715 redundant I/O system lets a ControlLogix controller communicate to a remote, redundant I/O chassis over an EtherNet/IP network. The 1715 redundant I/O system provides fault tolerance and redundancy for critical processes by using a redundant adapter pair and multiple I/O modules that have diagnostics.

The redundant I/O system must be connected to a ControlLogix system via an EtherNet/IP network. All connections are established via the Ethernet network by using the topologies supported by the 1756-EN2TR communication bridge.

ControlLogix Primary Chassis   ControlLogix Secondary Chassis

1756-EN2TR 1756-RM   1756-EN2TR 1756-RM

1715-AENTR 1715-AENTR 1715-I/O 1715-I/O 1715-I/O 1715-I/O 1715-I/O 1715-I/O

1715 Redundant I/O System
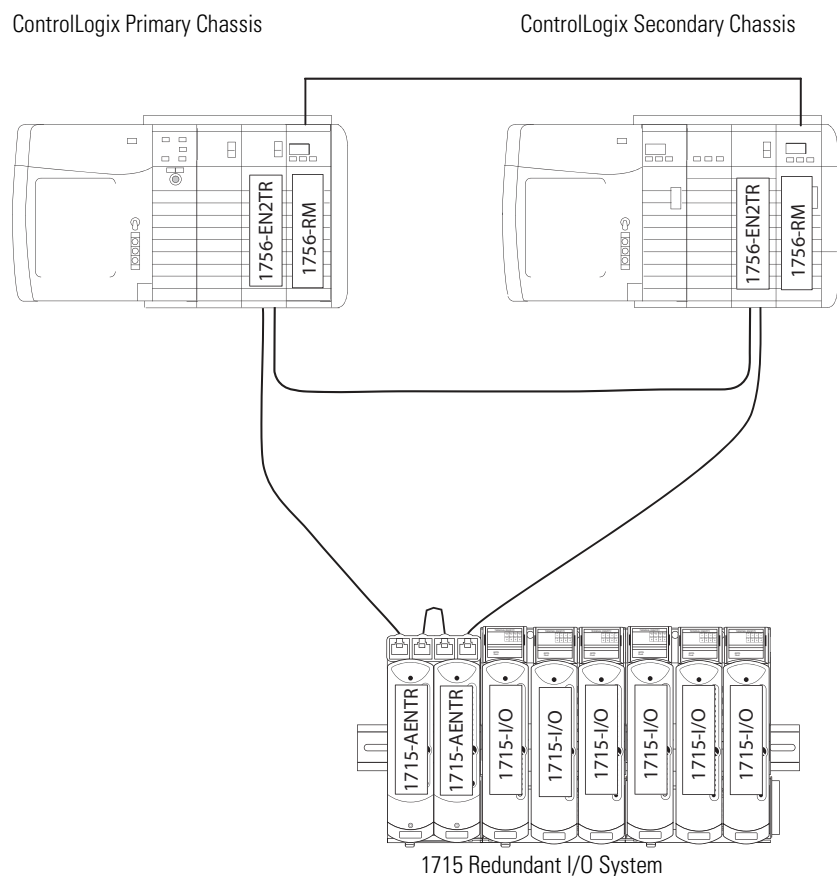
For detailed specifications, see the 1715 Redundant I/O System Specifications Technical Data, publication 1715-TD001A-EN-P.

ControlLogix Power Supplies
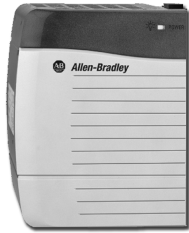
ControlLogix power supplies are used with the 1756 chassis to provide 1.2V, 3.3V, 5V, and 24V DC power directly to the chassis backplane. Select from these configurations:

- Standard power
- Redundant power
- ControlLogix-XT power

For detailed specifications, see 1756 ControlLogix Power Supplies Specifications, publication 1756-TD005.

Standard Power Supplies

You mount a standard power supply directly on the left end of the chassis, where it plugs directly into the backplane.

Cat. No.	Description	Voltage Category	Operating Voltage Range	Chassis
1756-PA72	ControlLogix, standard AC	120V/220V AC	85…265V AC	Standard, series A and series B
1756-PA75		120V/220V AC	85…265V AC	Standard series B
1756-PB72	ControlLogix, standard DC	24V DC	18…32V DC	Standard, series A and series B
1756-PB75		24V DC	18...32V DC	Standard series B
1756-PC75		48V DC	30…60V DC	Standard series B
1756-PH75		125V DC	90…143V DC	Standard series B

ControlLogix-XT Power Supplies

The ControlLogix-XT power supplies support extreme temperature environments.

Cat. No.	Description	Voltage Category	Operating Voltage Range	Chassis
1756-PAXT	ControlLogix-XT AC power supply	85...265V AC	120/240V AC	XT
1756-PBXT	ControlLogix-XT DC power supply	24V DC	18…32V DC	XT

Redundant Power Supplies

To build a redundant power supply system, you need the following:

- Two redundant power supplies (both 1756-PA75R or 1756-PB75R)
- One 1756-PSCA2 chassis adapter module
- Two 1756-CPR2 cables to connect the power supplies to the 1756-PSCA2 chassis adapter module (0.91 m (3 ft) length)
- User-supplied annunciator wiring to connect the power supplies to the input modules, as needed

The 1756-PSCA2 chassis adapter module is a passive device that funnels power from the redundant power supplies to the single power connector on the ControlLogix series B chassis backplane.

Cat. No.	Description	Voltage Category	Operating Voltage Range	Chassis
1756-PA75R	ControlLogix, redundant	120V/220V AC	85…265V AC	Standard series B
1756-PB75R		24V DC	19.2…32V DC	Standard series B

Accessories - Redundant Power Supplies

Cat. No.	Description	Specifications
1756-PSCA2	Chassis adapter module. Funnels power from the redundant power supplies to the single power connector on the ControlLogix series B chassis backplane.	Mounts directly to left side of 1756 chassis
1756-CPR2	Chassis adapter cable. Connects redundant power supply to 1756-PCSA2 chassis adapter.	Length: 0.91 m (3 ft)

Visualization Products

Visualization products, together with Logix for control and NetLinx architecture for communication, make up the Rockwell Automation Integrated Architecture strategy. The visualization strategy combines Rockwell Automation expertise in Allen-Bradley electronic operator interface and industrialized personal computer hardware with Rockwell Software supervisory control software. Current visualization products include the following:

- FactoryTalk View software
- PanelView Plus operator interface
- PanelView Plus CE operator interface
- Industrial computers and monitors

For more information, see the Operator Interface catalog pages at http://www.ab.com/en/epub/catalogs/12762/2181376/1239781/.