

# Technology Courses

## Courses Level and Relationships

**Typical Customer Target Groups:** Executives, Operators, Maintenance Personnel, Consultants and Others

**Typical ABB Target Groups:** Managers, Sales, Project Managers

**Typical Customer Target Groups:** Planning Personnel, Commissioning Personnel, System Engineers, Channel Partners, Consultants and Others

**Typical ABB Target Groups:** Engineering Personnel, Testing Personnel, Commissioning Personnel, Service Personnel

<b>Level 1 Courses</b>	<b>Focus: Fundamentals, Operation, Maintenance...</b>	<b>Level 2 Courses</b>	<b>Focus: Application, Configuration, Modification, Integration, Testing</b>	<b>Level 3 Courses</b>	<b>Focus: Engineering (e.g. Channel Partners)</b>
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### THEORY - Power Integration

CHP101	<b>CH5008</b> Planning & Realization of Electrical Traction Systems for Railways – Appl. & System Solutions	<b>3 days</b>
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### THEORY - Power System & Substation Automation

<b>CHP101</b> Power Grids Integration and Automation Technology – Fundamentals	<b>5 days</b>
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CHP101	<b>CHP109</b> Advanced Substation Automation Architecture &	<b>5 days</b>
CHP101	<b>CHP108</b> Cyber Security for Power Utilities – Applications	<b>2 days</b>
CHP101	<b>CHP184</b> Digital Substation Architecture Design – Applications	<b>2 days</b>

### THEORY - Protection

CHP101	<b>CHP102 (*)</b> Protection for Electrical Power Systems – Fundamentals	<b>5 days</b>
CHP101	<b>CHP102-DE (*)</b> Schutz in elektrischen Netzen – Grundlagen	<b>5 Tage</b>

CHP101	<b>CHP131</b> Protection in Power Plants – Applications	<b>5 days</b>
CHP101	<b>CHP132</b> Protection for Lines, Busbars, CBs & Power Transformers – Applications	<b>5 days</b>
CHP101	<b>CHP134</b> Protection for Distribution Networks and Industry – Fundamentals & Applications	<b>5 days</b>

<b>CHP132 or CHP134</b>	<b>CHP188</b> Protection Studies for various Power Networks – Advanced Solutions	<b>8 days</b>
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### THEORY - Communication Networks


<b>CHP511</b> Utility Communications – Fundamentals	<b>3 days</b>
<b>CHP525</b> Utility MPLS-TP Networks – Fundamentals	<b>2 days</b>
<b>CHP520 (*)</b> Utility SDH Networks – Fundamentals	<b>2 days</b>
<b>CHP522 (*)</b> Ethernet Switching and TCP/IP – Introduction	<b>2 days</b>
<b>CHP523 (*)</b> Wireless Communication – Introduction	<b>2 days</b>

We offer new all courses as a remote classroom training together with instructor led course. So, you have the choice, rather to attend the course physically in Baden or you take it remotely with a life session from home and with the possibility of remote connection to the training-model. All remote courses run always from 9AM - 4PM CET with breaks.

<b>Level 1 Courses</b>	The participants acquire fundamental knowledge on a specific subject or product basics. Level 1 courses are typically for newcomers. E.g. general philosophies, basic structures, - concepts, coherences with other technologies, HW structure, function overview, using of HMI's/etc.
<b>Level 2 Courses</b>	The participants gain an in-depth/advanced knowledge on a specific subject or application implement to a specific product. To attend level 2 courses we recommend knowledge on level 1 or equivalent job experiences. E.g. advanced application function knowledge, base design of a transformer protection solution, basic setting calculation of protection function, configuring & testing/troubleshooting of the IED, complete system modification and integration of add. parts.
<b>Level 3 Courses</b>	The participants gain complex advanced knowledge on a subject or for system integration. To attend level 3 courses normally requires wide and/or in-depth knowledge on level 1+2 in multiple fields or equivalent job experiences. E.g. design complex system solutions, overall study + design of a protection concepts, substation architecture, integration and engineering from crash (e.g. channel partners), etc.

(\*) = Course on request for special groups of 5 and more  
 (\*\*) = Special course for customers with SAS600 Systems  
 Pxxx = Web based training (WBT)

CHP1xx == = Previous course or equivalent experience is recommended  
 CHP1xx ==> = Previous course or equivalent experience is **required** !

 = New or updated Courses

Several courses above can be conducted on request in other languages with English documentation.

# Substation Automation Courses

## System Courses – Level and Relationships

**Typical Customer Target Groups:** Executives, Operators, Maintenance Personnel, Consultants and Others

**Typical ABB Target Groups:** Managers, Sales, Project Managers

**Typical Customer Target Groups:** Planning Personnel, Commissioning Personnel, System Engineers, Channel Partners, Consultants and Others

**Typical ABB Target Groups:** Engineering Personnel, Testing Personnel, Commissioning Personnel, Service Personnel

<b>Level 1 Courses</b>	<b>Focus: Fundamentals, Operation, Maintenance ...</b>	<b>Level 2 Courses</b>	<b>Focus: Application, Configuration, Modification, Integration, Testing</b>	<b>Level 3 Courses</b>	<b>Focus: Engineering (e.g. Channel Partners)</b>
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### THEORY - Substation Automation

CHP101	Power Grids Integration and Automation Technology – Fundamentals	5 days	
CHP101	CHP109	Advanced Substation Automation Architecture & Design – Applications	5 days
CHP101	CHP108	Cyber Security for Power Utilities – Applications --> CHP109	2 days
CHP101	CHP184	Digital Substation Architecture Design – Applications --> CHP109	2 days
CHP001	CHS008	Planning & Realization of Electrical Traction Systems for Railways – Appl. & System Solutions	3 days

### PRODUCT - Substation Automation

CHP109	CHP170	SDM600 System Data Management - Operation & Configuration	2 day
CHP109	CHP157	SAM600 for Digital Substation Solutions – Operation & Configuration --> CHP158	2 days

### SYSTEM - Substation Automation

CHP101	CHP150	Relion®/PCM600 for Protection – Operation & Maintenance	5 days
CHP101	CHP122	SAS600 Substation Automation – Operation	3 days
CHP101	CHP123	SAS600 Substation Automation – Operation & Maintenance	10 days
CHP150 or CHP109	CHP158	Relion®/SAM600/PCM600/ITT600 Digital Substation – Testing & Commissioning	5 days
CHP123	CHP194	IT600/ITT600 for SAS600 Modification – System Engineering	10 days
CHP101	CHP176	RTU560 Remote Terminal Unit Modification – System Engineering	5 days
CHP109	CHP191	IET600/ITT600 for IEC 61850 Integration & Testing – System Engineering	5 days
CHP150	CHP195	IET600 for IEC 61850 Integration with MicroSCADA - System Engineering	10 days
CHP123 and CHP150	CHP196	only Hitachi internal IET600 Expert for IEC 61850 Integration with MicroSCADA - System Engineering	10 days
CHP196	CHS151	only Hitachi internal Digital Substation Upgrade for ABB Engineers SAS600 – System Engineering & Testing	5 days
CHP196	CHP197	only Hitachi internal SAS600 advanced Integration and Testing - System Engineering	10 days

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<b>Level 1 Courses</b>	The participants acquire fundamental knowledge on a specific subject or product basics. Level 1 courses are typically for newcomers. E.g. general philosophies, basic structures, - concepts, coherences with other technologies, HW structure, function overview, using of HMI'setc.
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# Protection Courses

## Courses Level and Relationships

**Typical Customer Target Groups:** Executives, Operators, Maintenance Personnel, Consultants and Others

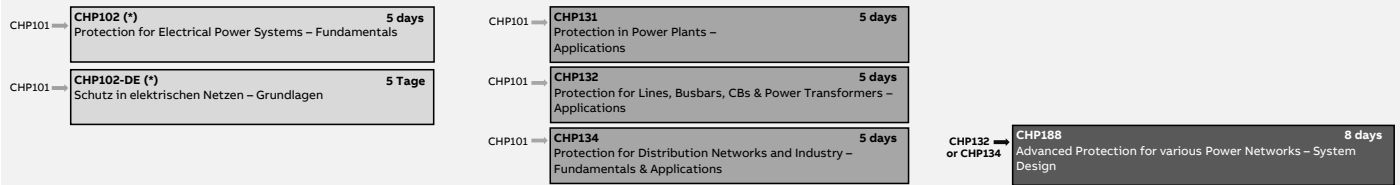
**Typical Customer Target Groups:** Planning Personnel, Commissioning Personnel, System Engineers, Channel Partners, Consultants and Others

**Typical ABB Target Groups:** Managers, Sales, Project Managers

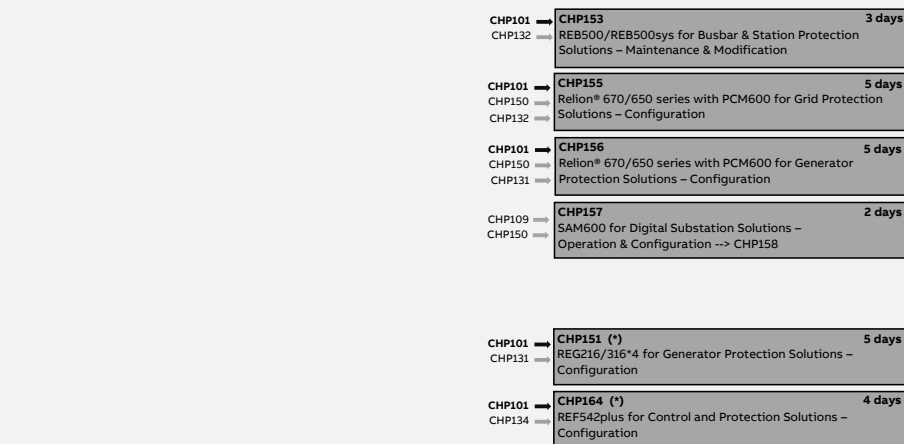
**Typical ABB Target Groups:** Engineering Personnel, Testing Personnel, Commissioning Personnel, Service Personnel

Level 1 Courses	Focus: Fundamentals, Operation, Maintenance ...	Level 2 Courses	Focus: Application, Configuration, Modification, Integration, Testing	Level 3 Courses	Focus: Engineering (e.g. Channel Partners)
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### THEORY - Protection



### PRODUCT - Protection



### SYSTEM - Protection



We offer new all courses as a remote classroom training together with instructor led course. So, you have the choice, rather to attend the course physically in Baden or you take it remotely with a life session from home and with the possibility of remote connection to the training-model. All remote courses run always from 9AM - 4PM CET with breaks.

Level 1 Courses	The participants acquire fundamental knowledge on a specific subject or product basics. Level 1 courses are typically for newcomers. E.g. general philosophies, basic structures, - concepts, coherences with other technologies, HW structure, function overview, using of HMI's etc.
Level 2 Courses	The participants gain an in-depth/advanced knowledge on a specific subject or application implement to a specific product. To attend level 2 courses we recommend knowledge on level 1 or equivalent job experiences. E.g. advanced application function knowledge, base design of a transformer protection solution, basic setting calculation of protection function, configuring & testing/troubleshooting of the IED, complete system modification and integration of add. parts.
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= New or updated Courses

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# Communication Networks

## Theory, Product & Network Mgt System Courses – Level and Relationships

**Typical Customer Target Groups:** Executives, Operators, Maintenance Personnel, Consultants and Others  
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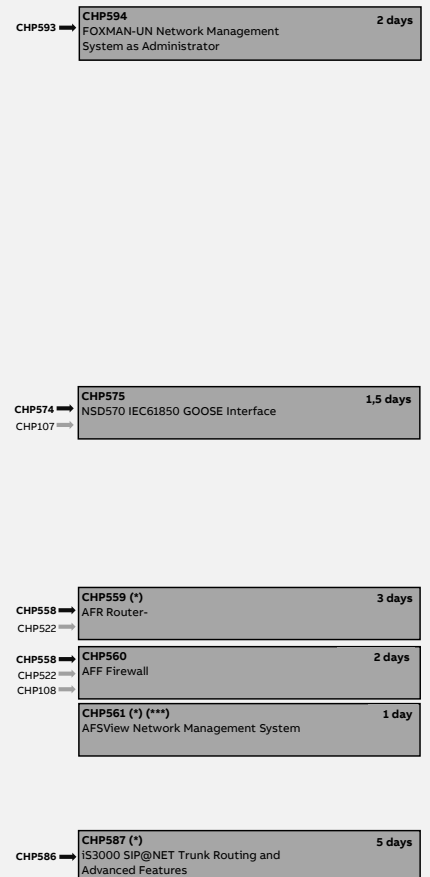
<b>Level 1 Courses</b>	<b>Focus: Fundamentals, Operation, Maintenance ...</b>	<b>Level 1 Courses</b>	<b>Focus: Fundamentals, Operation, Maintenance ...</b>	<b>Level 2 Courses</b>	<b>Focus: Application, Configuration, Modification, Integration, Testing</b>
				<b>Level 3 Courses</b>	<b>Focus: Engineering (e.g. Channel Partners)</b>

### THEORY - Communication Network

<b>CHP511</b> Utility Communications – Fundamentals	<b>3 days</b>
<b>CHP525</b> Utility MPLS-TP Networks – Fundamentals	<b>2 days</b>
<b>CHP520 (*)</b> Utility SDH Networks – Fundamentals	<b>2 days</b>
<b>CHP522 (*)</b> Ethernet Switching and TCP/IP – Introduction	<b>2 days</b>
<b>CHP523 (*)</b> Wireless Communication – Introduction	<b>2 days</b>

### PRODUCT - Communication Network

CHP511 =>	<b>CHP595</b> FOX615 Multiservice Platform for SDH Networks	<b>5 days</b>
CHP520 =>	<b>CHP598</b> FOX615 Multiservice Platform for MPLS-TP Networks	<b>5 days</b>
CHP522 =>	<b>CHP593 (***)</b> FOXMAN-UN Network Management System as Operator	<b>3 days</b>
	<b>CHP554 (*) (***)</b> FOXView Enterprise Network Management System	<b>1 day</b>
CHP511 =>	<b>CHP592 (*)</b> FOX515 Access/Transport MUX	<b>5 days</b>
CHP520 =>	<b>CHP552 (*)</b> FOX515H & Hs Multiservice Utility-MUX	<b>3 days</b>
CHP522 =>	<b>CHP553 (*)</b> FOX505 Access MUX	<b>4 days</b>
CHP511 =>	<b>CHP556 (*)</b> FOX660 Multiservice Utility MUX for TDM Transport	<b>3 days</b>
CHP520 =>	<b>CHP555 (*)</b> FOX605 A Secure MPLS enabled Utility MUX	<b>4 days</b>
CHP522 =>	<b>CHP570</b> ETL600 R4 Universal Digital PLC Equipment	<b>5 days</b>
CHP522 =>	<b>CHP574</b> NSD570 Teleprotection Equipment	<b>2,5 days</b>
CHP522 =>	<b>CHP558</b> AFS600 Switch Family	<b>3 days</b>
CHP522 =>	<b>CHP582 (*)</b> Tropos Wireless Mesh Networks	<b>3 days</b>
CHP523 =>	<b>CHP586 (*)</b> iS3000 SIP@NET Telephone System	<b>5 days</b>
CHP522 =>	<b>CHP588</b> SV9500 Appliance Server Telephone System	<b>5 days</b>
CHP522 =>	<b>CHP589 (*)</b> SV9500 Standard Server Telephone System	<b>5 days</b>
CHP522 =>	<b>CHP590</b> SV9100 Telephone System	<b>5 days</b>



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(\*) = Course on Request  
 (\*\*) = Course delivered through the LC SAS & Protection  
 (\*\*\*) = Attendance of equipment courses that have to be managed by the NMS is required.

CHP1xx => = Previous course or equivalent experience is recommended  
 CHP1xx ==> = Previous course or equivalent experience is required !

= New or updated Courses

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