培训手册2019
Training Manual 2019

欢迎来到 ABB 机器人培训中心
Welcome to ABB Robot Training Center

ABB机器人是工业机器人、协作机器人及先进的数字化服务的开拓者。作为全球领先的工业机器人技术提供商，ABB机器人在53个国家、100多个地区开展业务，全球累计装机量30余万台，涉及广泛的行业和应用领域。ABB致力于帮助客户提高生产柔性、效率、安全和可靠性，助其走向互联、协作的未来工厂。

ABB Robotics is a pioneer in industrial and collaborative robots and advanced digital services. As one of the world's leading robotics suppliers, we are active in 53 countries and over 100 locations and have shipped over 300,000 robot solutions in a diverse range of industries and applications. We help our customers to improve flexibility, efficiency, safety and reliability, while moving towards the connected and collaborative factory of the future.

ABB机器人是中国工业机器人行业的先行者和领跑者，早在1994年就开始在中国市场推广工业机器人应用，早在2005年就开始在中国开展研发和生产工作，是最早在中国开展工业机器人本地研发和本地生产的跨国企业。

ABB Robotics is an early bird and market leader in the industrial robot industry in China. It started business in China as early as in 1994 and it is the first multi-national company to start local R&D and manufacturing in China as early as in 2005.

ABB机器人提供完整的产品系列，包括裸机、软件、外围设备、模块单元、多种应用、系统集成及服务，是全球唯一一家提供汽车生产全部四大工艺（冲压、白车身、涂装、总装）的机器人解决方案的供应商，也是截至目前唯一一家在华开展机器人从研发、生产、销售、工程、系统集成到服务全价值链业务的跨国企业。ABB机器人在中国拥有2,000余名员工，遍布20余座城市。

ABB Robotics provides full portfolio from naked robot, software, peripheral equipment, module cell, various applications, system integration to service. ABB is the world's only robotics company to provide complete solution from press automation, body-in-white, paint automation to powertrain assembly to auto manufacturing industry. ABB Robotics is the only multi-national robotics company to localize full value chain from R&D, manufacturing, sales, engineering, system integration to service in China. ABB Robotics has around 2,000 employees located in more than 20 cities.

ABB机器人上海培训中心为客户提供系统的标准化和定制化机器人培训课程，并为客户不同岗位员工提供机器人使用技能的成长路线课程规划，客户通过学习机器人初级、中级和高级课程，可以满足机器人系统的操作、编程、维护保养、电气和机械维修、工作站模拟等工作，最大限度的减少现场机器人停机时间，提高机器人使用效率。

ABB robotics training center, operating in Shanghai, is always concentrating on developing and delivering of the professional robotics training solutions. It provides six categories of standard courses including Operation, Programming, Electrical Service, Mechanical Maintenance, Software and Application. Meanwhile, the customized courses are also available if you have more specific requirement. We are trying our best to help the customer to reduce risks and improve productivity through the training.

ABB机器人上海培训中心拥有良好的培训环境、专业的培训讲师、充足的培训设备和多样化的培训课程，保证客户在理论学习的同时，拥有足够的实际操作练习；我们可以提供在ABB机器人培训中心和客户现场的培训，客户通过考核后，颁发ABB机器人培训证书。

ABB robotics training center provides professional training facility and experienced instructors. You will get not only the detailed theoretical knowledge but also the sufficient practice during the training. The trainee, who passed the examination, could receive the certificate after the training.

学，无止境；学，业有成。
ABB机器人培训中心将在企业与个人的发展道路上陪您走得更高更远。

ABB robotics training center always makes you and your company better and better.

目录

012	**机器人培训企业用户课程指南**
014	**机器人培训企业学员技能等级体系**
018	**机器人培训课程分类**
020	**工业机器人**
022	CNIR101 IRC5机器人操作
023	CNIR102 IRB 14000机器人操作
024	CNIR103 IRC5机器人现场安装
026	CNIR201 IRC5机器人基础编程
027	CNIR202 IRC5机器人高级编程
028	CNIR203 IRB 14000编程
029	CNIR204 S4C + 基础编程
030	CNIR205 S4C + 高级编程
031	CNIR206 VWRS 基础编程
032	CNIR207 总线配置与视觉通讯
034	CNIR301 IRC5 机器人电气原理&故障排除
035	CNIR303 IRC5 Compact电气原理&故障排除
036	CNIR305 IRB 14000电气原理
037	CNIR306 BMW L7 IRC5 电气原理及故障排除
038	CNIR307 IDFP 电气原理
039	CNIR308 BMW G2X IRC5电气原理及故障排除
041	CNIR401 IRB 6640机械维修（兼容IRB 6620）
042	CNIR402 IRB 2400机械维修

下一页

Catalogue

012 Course Selection For Enterprise Users

014 Skill-Level System For Enterprise Users

018 Training Course Category

020 Industry Robot

022 CNIR101 IRC5 Operation

023 CNIR102 IRB 14000 Operation

024 CNIR103 IRC5 Installation instruction of Industrial robot

026 CNIR201 IRC5 Basic Programming

027 CNIR202 IRC5 Advanced Programming

028 CNIR203 IRB 14000 Basic Programming

029 CNIR204 S4C + Basic Programming

030 CNIR205 S4C + Advanced Programming

031 CNIR206 VWRS Basic Programming

032 CNIR207 Industry Network Configuration And Vision Application

034 CNIR301 IRC5 Electrical Principle & Troubleshooting

035 CNIR303 IRC5 Compact Electrical Principle & Troubleshooting

036 CNIR305 IRB 14000 Electrical Maintenance

037 CNIR306 BMW L7 IRC5 Electrical Principle & Troubleshooting

038 CNIR307 IDFP Electrical Principle

039 CNIR308 BMW G2X IRC5 Electrical Principle & Troubleshooting

041 CNIR401 IRB 6640 Mechanical (Compatibility IRB 6620)

042 CNIR402 IRB 2400 Mechanical Maintenance

Next page

目录

043	CNIR403 IRB 360机械维修（兼容IRB 340）
044	CNIR404 IRB 460机械维修（兼容 IRB 260/IRB 660/IRB 760）
045	CNIR405 IRB 1600机械维修
046	CNIR406 IRB 120机械维修
047	CNIR407 IRB 1200机械维修
048	CNIR408 IRB 140机械维修
049	CNIR409 IRB 1520机械维修
050	CNIR410 IRB 14000机械维修
051	CNIR411 IRB 1410 机械维修（兼容IRB 1400）
052	CNIR412 IRB 2600机械维修（兼容IRB 4600）
053	CNIR413 IDFP 机械维修
054	CNIR414 IRB 6700 机械维修
056	CNIR501 RobotStudio 软件培训
057	CNIR502 PickMaster 3
059	CNIR601 弧焊工艺应用
060	CNIR602 点焊工艺应用
061	CNIR603 SafeMove 1 & EPS应用
062	CNIR604 视觉系统
063	CNIR605 MultiMove 应用
064	CNIR606 SafeMove2 应用
065	CNIR607 VWRS 应用
066	CNIR608 IDFP 基础应用
067	CNIR609 力控应用

下一页

Catalogue

043 CNIR403 IRB 360 Mechanical (Compatibility IRB 340)
044 CNIR404 IRB 460 Mechanical (Compatibility IRB 260/IRB 660/IRB 760)
045 CNIR405 IRB 1600 Mechanical Maintenance
046 CNIR406 IRB 120 Mechanical Maintenance
047 CNIR407 IRB 1200 Mechanical Maintenance
048 CNIR408 IRB 140 Mechanical Maintenance
049 CNIR409 IRB 1520 Mechanical Maintenance
050 CNIR410 IRB 14000 Mechanical Maintenance
051 CNIR411 IRB 1410 Mechanical Maintenance (Compatibility IRB 1400)
052 CNIR412 IRB 2600 Mechanical Maintenance (Compatibility IRB 4600)
053 CNIR413 IDFP Mechanical Maintenance
054 CNIR414 IRB 6700 Mechanical Maintenance
056 CNIR501 RobotStudio Software
057 CNIR502 PickMaster 3
059 CNIR601 Arcwelding Application
060 CNIR602 Spotwelding Application
061 CNIR603 SafeMove 1 & EPS Application
062 CNIR604 Integrated Vision
063 CNIR605 MultiMove Application
064 CNIR606 SafeMove2 Application
065 CNIR607 VWRS Application
066 CNIR608 IDFP Basic Application
067 CNIR609 Force Control

Next page

目录

068	**喷涂机器人**
070	CNPR101 IRC5P机器人操作
071	CNPR102 S4P+机器人操作
072	CNPR103 IRC5P 机器人现场安装
074	CNPR201 IRC5P机器人编程
075	CNPR202 S4P+机器人编程
077	CNPR301 IRC5P 电气原理&故障排除
078	CNPR303 S4P+ 电气原理&故障排除
080	CNPR401 IRB 5500机械维修
081	CNPR402 IRB 5400机械维修
082	CNPR403 IRB 580机械维修
083	CNPR404 IRB 540机械维修
085	CNPR501-A IPS(RW5)
086	CNPR501-B IPS(RW6)
087	CNPR502 RobotStudio软件（喷涂）
089	CNPR601 RobView 5
090	CNPR602 RB926雾化器
091	CNPR603 RB951雾化器
092	CNPR604 RB1000雾化器
093	CNPR605 涂装工艺（换色、清洗）

下一页

Catalogue

068 Painting Robot

070 CNPR101 IRC5P Operation

071 CNPR102 S4P + Operation

072 CNPR103 IRC5P Installation Instruction of Painting Robot

074 CNPR201 IRC5P Programming

075 CNPR202 S4P + Programming

077 CNPR301 IRC5P Electrical Principle & Troubleshooting

078 CNPR303 S4P + Electrical Principle & Troubleshooting

080 CNPR401 IRB 5500 Mechanical Maintenance

081 CNPR402 IRB 5400 Mechanical Maintenance

082 CNPR403 IRB 580 Mechanical Maintenance

083 CNPR404 IRB 540 Mechanical Maintenance

085 CNPR501-A IPS(RW5)

086 CNPR501-B IPS(RW6)

087 CNRP502 RobotStudio software (Painting)

089 CNPR601 RobView 5

090 CNPR602 RB926 Atomizer

091 CNPR603 RB951 Atomizer

092 CNPR604 RB1000 Atomizer

093 CNRP605 Painting process (ColorChange and Cleaning)

Next page

目录

094 ABB校企合作——机器人技术及应用

095 CNED101 高校学生初级培训课程

096 CNED102 高校学生中级培训课程

097 CNED201 高校讲师初级培训课程

098 CNED202 高校讲师中级培训课程

099 CNED301 机器人通用技能社教联合班培训课程

100 CNED302 机器人高阶技能社教联合班培训课程

101 交通

102 住宿

Catalogue

094 ABB Robot School-Enterprise Cooperative——Robotics Technology and Application

095 CNED101 College student’ Basic Skill Course

096 CNED102 College student’Intermediate Skill Course

097 CNED201 College Instructor’Basic Skill Course

098 CNED202 College Instructor’Intermediate Skill Course

099 CNED301 ABB Robotics General Skill Course

100 CNED302 ABB Robotics Higher Skill Course

101 Transportation

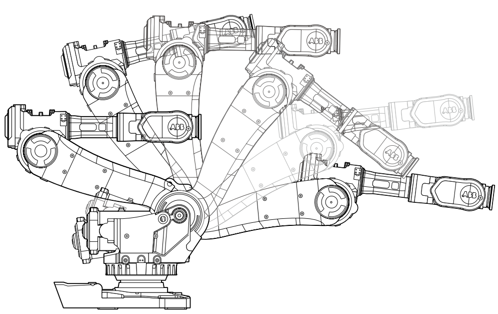
102 Accommodation

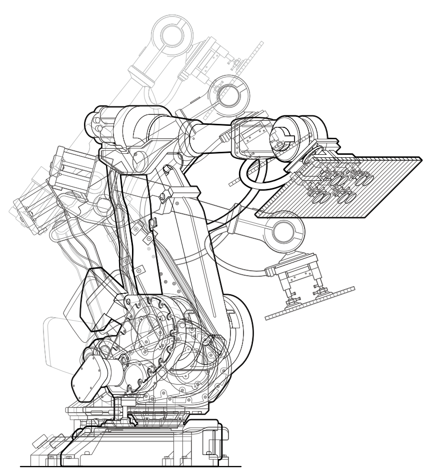
机器人培训
企业用户课程选择

欢迎来到上海 ABB 机器人培训中心，我们共有 6 大类 65 门课程可供阁下选择。
您可以参考以下成长路线图，在下一个页面选择您需要的课程。
如果您已经知道您需要的课程，请直接进入下一个页面。
如果您对课程有特别需求，我们也乐意为您提供定制化培训。

成长路线图

	操作员 / 助理工程师	电气维修工程师	机械维修工程师	项目 / 工艺工程师
高级课程		故障排除 高级编程		RobotStudio 高级编程
中级课程	应用 编程	应用 电气维修 编程	编程 机械维修	应用 电气维修 编程
基础课程	机器人操作	机器人操作	机器人操作	机器人操作



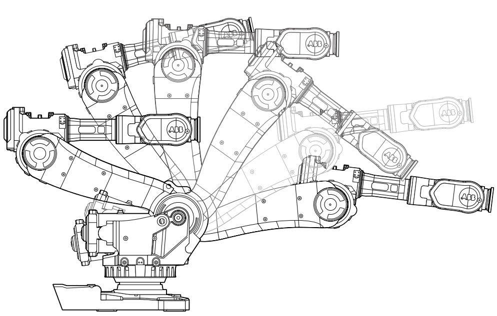


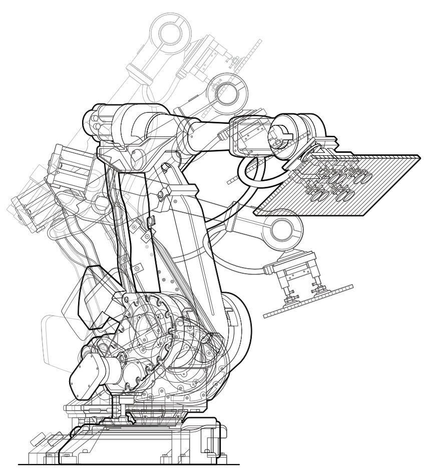
Robotics Training
Course Selection For Enterprise Users

Welcome to ABB training center Shanghai. We provide 6 categories, 65 courses, for you.
Please refer to the following training guide to make your decision.
Please go to next page, if you know the course you need.
The customized courses is available, if you have more specific requirement .

Growth Roadmap

	Operator/ Assistant Engineer	Electrical Maintenance Engineer	Mechanical Maintenance Engineer	Project / Process Engineer
Advanced		Troubleshooting Advanced-Programming		RobotStudio Advanced-Programing
Intermediate	Application Programming	Application Electrical Maintenance Programing	Mechanical Maintenance Programming	Application Electrical Maintenance Programing
Basic	Operation	Operation	Operation	Operation

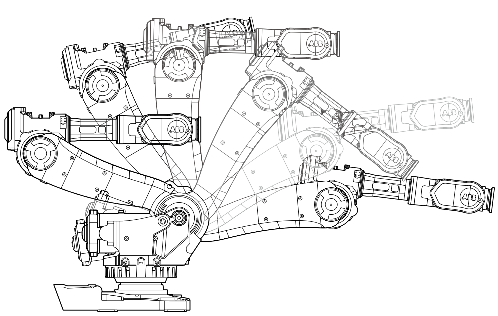


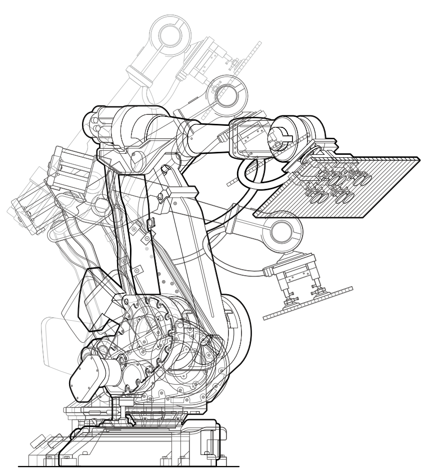


机器人培训
企业学员技能等级体系

	操作员 / 助理工程师	电气维修工程师	机械维修工程师	项目 / 工艺工程师
高级课程		高级编程 故障排除 CNIR 202 ……		高级编程 RobotStudio CNIR 202 CNIR 501 ……
中级课程	应用 编程 CNIR 201 OP: CNIR203 OP: CNIR204 OP: CNIR601 OP: CNIR602 OP : CNIR603 OP: CNIR604 OP: CNIR605 ……	应用 编程 电气维修 CNIR 201 CNIR 301 OP: CNIR303 OP: CNIR305 OP: CNIR203 OP: CNIR204 OP: CNIR601 OP: CNIR602 OP: CNIR603 OP: CNIR604 OP: CNIR605 ……	编程 机械维修 CNIR 201 CNIR 401 OP: CNIR402 OP: CNIR403 OP: CNIR404 OP: CNIR405 OP: CNIR406 OP: CNIR407 OP: CNIR408 OP: CNIR409 OP: CNIR410 ……	应用 编程 电气维修 CNIR 201 CNIR 301 OP: CNIR303 OP: CNIR305 OP: CNIR203 OP: CNIR204 OP: CNIR601 OP: CNIR602 OP : CNIR603 OP: CNIR604 OP: CNIR605 ……
基础课程	机器人操作 CNIR 101 OP: CNIR 102 ……	机器人操作 CNIR 101 OP: CNIR 102 ……	机器人操作 CNIR 101 OP: CNIR 102 ……	机器人操作 CNIR 101 OP: CNIR 102 ……

备注：需完成指定课程，或指定可选课程中的一门或任意门，即可授予相应证书，或申请更高阶层课程。证书中将体现完成课程明细。



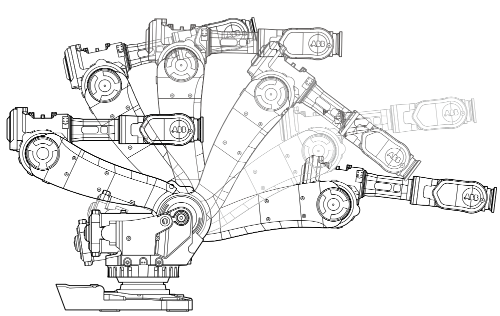


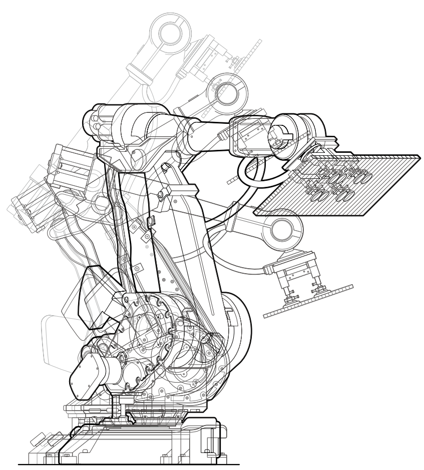
Robotics Training

Skill-Level System For Enterprise Users

	Operator/ Assistant Engineer	Electrical Maintenance Engineer	Mechanical Maintenance Engineer	Project/Process Engineer
Advanced		Troubleshooting Advanced-Programming CNIR 202 ……		RobotStudio Advanced-Programing CNIR 202 CNIR 501 ……
Intermediate	Application Programming CNIR 201 OP: CNIR203 OP: CNIR204 OP: CNIR601 OP: CNIR602 OP : CNIR603 OP: CNIR604 OP: CNIR605 ……	Application Electrical Maintenance Programming CNIR 201 CNIR 301 OP: CNIR303 OP: CNIR305 OP: CNIR203 OP: CNIR204 OP: CNIR601 OP: CNIR602 OP: CNIR603 OP: CNIR604 OP: CNIR605 ……	Mechanical Maintenance Programming CNIR 201 CNIR 401 OP: CNIR402 OP: CNIR403 OP: CNIR404 OP: CNIR405 OP: CNIR406 OP: CNIR407 OP: CNIR408 OP: CNIR409 OP: CNIR410 ……	Application Electrical Maintenance Programming CNIR 201 CNIR 301 OP: CNIR303 OP: CNIR305 OP: CNIR203 OP: CNIR204 OP: CNIR601 OP: CNIR602 OP : CNIR603 OP: CNIR604 OP: CNIR605 ……
Basic	Operation CNIR 101 OP: CNIR 102 ……	Operation CNIR 101 OP: CNIR 102 ……	Operation CNIR 101 OP: CNIR102 ……	Operation CNIR 101 OP: CNIR 102 ……

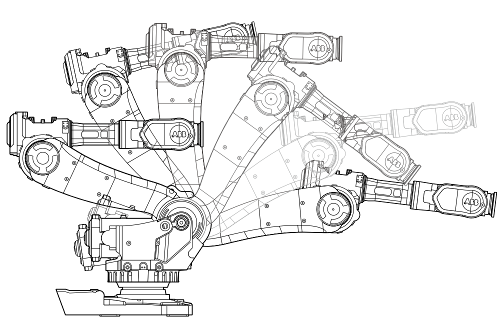
Tips: Completed specified courses, one or more optional courses, can authorized certification, or apply for higher level course. Certification will list course name.

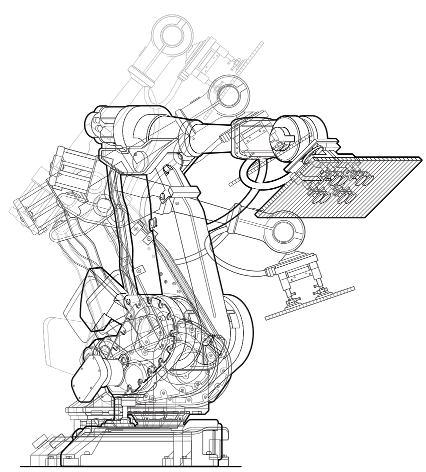




机器人培训
校企合作学员课程指南和技能等级体系

	高校学生	高校讲师	社会学员
高级课程	CNIR501 RobotStudio 软件培训 CNIR601 弧焊工艺应用 CNIR604 视觉系统 ………	CNIR3XX 电气维修及故障排除 CNIR602 点焊工艺应用 CNIR605 MultiMove 应用	CNIR4XX 机械维修 CNIR603 SafeMove 1 & EPS 应用 CNIR606 SafeMove2 应用
中级课程	**CNED 102** **中级技能**	**CNED 202** **中级技能**	**CNED 302** **高阶技能**
基础课程	**CNED 101** **初级技能**	**CNED 201** **初级技能**	**CNED 301** **通用技能**

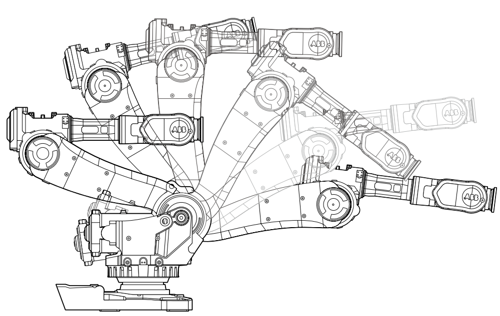


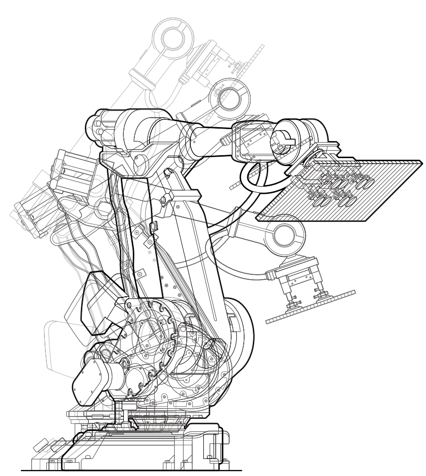


Robotics Training

Course Guide And Skill-Level System For School-Enterprise Cooperative Students

	College Student	College Instructor	Social Student
Advanced	CNIR501 RobotStudio Software CNIR601 Arcwelding Application CNIR604 Integrated Vision ………	CNIR3XX Electrical Principle& Troubleshooting CNIR602 Spotwelding Application CNIR605 MultiMove Application	CNIR4XX Mechanical CNIR603 SafeMove 1 & EPS CNIR606 SafeMove2 Application
Intermediate	**CNED 102** **Intermediate Skill**	**CNED 202** **Intermediate Skill**	**CNED 302** **Higher Skill**
Basic	**CNED 101** **Basic Skill**	**CNED 201** **Basic Skill**	**CNED 301** **General Skill**





机器人培训
分类

- **机器人操作**

- **机械维修**

- **编程**

- **软件**

- **电气维修**

- **应用**






Robotics Training Category

- **Operation**

- **Mechanical Maintenance**

- **Programming**

- **Software**

- **Electrical Maintenance**

- **Application**

工业机器人
Industry Robot

- CNIR101 IRC5 机器人操作
- CNIR102 IRB 14000 机器人操作
- CNIR103 IRC5 机器人现场安装
- CNIR201 IRC5 机器人基础编程
- CNIR202 IRC5 机器人高级编程
- CNIR203 IRB 14000 编程
- CNIR204 S4C + 基础编程
- CNIR205 S4C + 高级编程
- CNIR206 VWRS 基础编程
- CNIR207 总线配置与视觉通讯
- CNIR301 IRC5 机器人电气原理 & 故障排除
- CNIR303 IRC5 Compact 电气原理 & 故障排除
- CNIR305 IRB 14000 电气原理
- CNIR306 BMW L7 IRC5 电气原理及故障排除
- CNIR307 IDFP 电气原理
- CNIR308 BMW G2X IRC5 电气原理及故障排除
- CNIR401 IRB 6640 机械维修（兼容 IRB 6620）
- CNIR402 IRB 2400 机械维修
- CNIR403 IRB 360 机械维修（兼容 IRB 340）
- CNIR404 IRB 460 机械维修（兼容 IRB 260/IRB 660/IRB 760）
- CNIR405 IRB 1600 机械维修
- CNIR406 IRB 120 机械维修
- CNIR407 IRB 1200 机械维修
- CNIR408 IRB 140 机械维修
- CNIR409 IRB 1520 机械维修
- CNIR410 IRB 14000 机械维修
- CNIR411 IRB 1410 机械维修（兼容 IRB 1400）
- CNIR412 IRB 2600 机械维修（兼容 IRB 4600）
- CNIR413 IDFP 机械维修
- CNIR414 IRB6700 机械维修
- CNIR501 RobotStudio 软件培训
- CNIR502 PickMaster 3
- CNIR601 弧焊工艺应用
- CNIR602 点焊工艺应用
- CNIR603 SafeMove 1 & EPS 应用
- CNIR604 视觉系统
- CNIR605 MultiMove 应用
- CNIR606 SafeMove2 应用
- CNIR607 VWRS 应用
- CNIR608 IDFP 基础应用

- CNIR101 IRC5 Operation
- CNIR102 IRB 14000 Operation
- CNIR103 IRC5 Installation instruction of Industrial robot
- CNIR201 IRC5 Basic Programming
- CNIR202 IRC5 Advanced Programming
- CNIR203 IRB 14000 Basic Programming
- CNIR204 S4C + Basic Programming
- CNIR205 S4C + Advanced Programming
- CNIR206 VWRS Basic Programming
- CNIR207 Industry Network Configuration And Vision Application
- CNIR301 IRC5 Electrical Principle & Troubleshooting
- CNIR303 IRC5 Compact Compact Electrical Principle & Troubleshooting
- CNIR305 IRB 14000 Electrical Maintenance
- CNIR306 BMW L7 IRC5 Electrical Principle & Troubleshooting
- CNIR307 IDFP Electrical Principle
- CNIR308 BMW G2X IRC5 Electrical Principle & Troubleshooting
- CNIR401 IRB 6640 Mechanical (Compatibility IRB 6620)
- CNIR402 IRB 2400 Mechanical Maintenance
- CNIR403 IRB 360 Mechanical (Compatibility IRB 340)
- CNIR404 IRB 460 Mechanical (CompatibilityIRB 260/IRB 660/IRB 760)
- CNIR405 IRB 1600 Mechanical Maintenance
- CNIR406 IRB 120 Mechanical Maintenance
- CNIR407 IRB 1200 Mechanical Maintenance
- CNIR408 IRB 140 Mechanical Maintenance
- CNIR409 IRB 1520 Mechanical Maintenance
- CNIR410 IRB 14000 Mechanical Maintenance
- CNIR411 IRB 1410 Mechanical Maintenance (Compatibility IRB 1400)
- CNIR412 IRB 2600 Mechanical Maintenance (Compatibility IRB 4600)
- CNIR413 IDFP Mechanical Maintenance
- CNIR414 IRB 6700 Mechanical Maintenance
- CNIR501 RobotStudio Software
- CNIR502 PickMaster 3
- CNIR601 Arcwelding Application
- CNIR602 Spotwelding Application
- CNIR603 SafeMove 1 & EPS Application
- CNIR604 Integrated Vision
- CNIR605 MultiMove Application
- CNIR606 SafeMove2 Application
- CNIR607 VWRS Application
- CNIR608 IDFP Basic Application

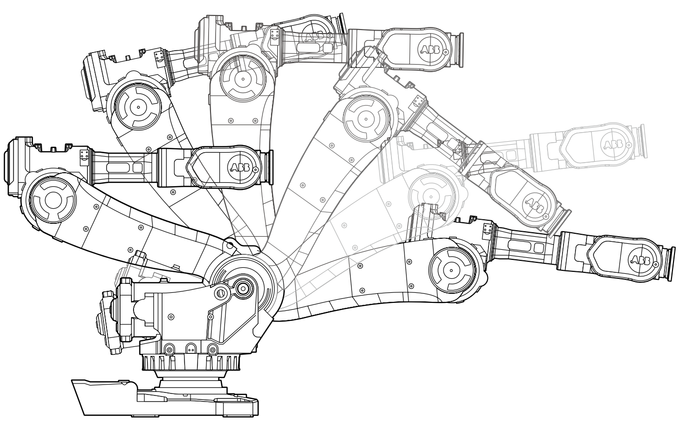
机器人操作
Operation

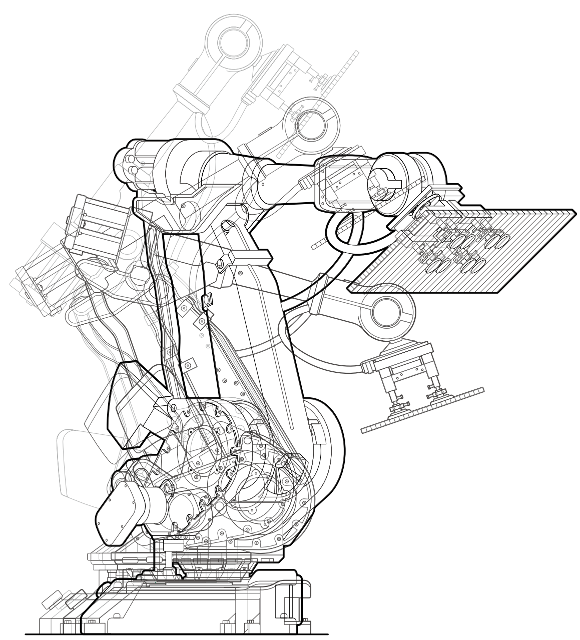
工业机器人

- CNIR101 IRC5 操作
- CNIR102 IRB 14000 操作
- CNIR103 IRC5 机器人现场安装

Industry Robot

- CNIR101 IRC5 Operation
- CNIR102 IRB 14000 Operation
- CNIR103 IRC5 Installation Instruction of Industrial Robot





CNIR101 IRC5 操作
CNIR101 IRC5 Operation

适用机型
- 使用 IRC5 控制系统的所有机型

课程对象
- 操作工
- 机械维修工程师
- 电气维修工程师
- 项目 / 工艺工程师

知识要求
- 无

完成此课程后，您将可以
- 了解 ABB 工业机器人工作原理及系统架构
- 熟悉工业机器人安全操作规范
- 能够在手动模式下使用示教器操作机器人，修改程序中的位置点
- 在自动模式下加载并运行 RAPID 程序
- 能够保存程序
- 备份系统
- 能够更新机器人零位

培训内容
- ABB 工业机器人系统介绍
- 安全操作规范，紧急情况处置
- 使用示教器操作机器人，修改位置点
- 调用系统中的例行程序
- 程序备份和系统备份方法介绍，实践
- 机器人零位更新方法介绍，实践

课程信息
- 培训时间: 3 天
- 学员人数: 4-10 人 / 班

Applicable Robot Type
- All the ABB robot with IRC5 controller

Target Groups
- Operator
- Mechanical maintenance engineer
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- None

After this training, you are able to
- Understand the structure and principle of ABB industry robot
- Be Familiar with industry robot safety guide
- Operate the robot independently Modify the position in program with TPU
- Load and run a program in auto mode
- Save the program
- Backup the system
- Update revolution counter

Contents
- ABB industry robot system introduction
- Safety instruction
- Operating robot with TPU Position modification with TPU in manual mode
- Load and run a program in auto mode
- Saving the program System backup
- Introduction of robot calibration Practice

Information
- Duration: 3 days
- Number of Participants: 4-10 persons

CNIR102 IRB 14000 操作
CNIR102 IRB 14000 operation

适用机型
- ABB IRB 14000 工业机器人

课程对象
- 操作人员
- 机械工程师
- 维护保养人员

知识要求
- 无

完成此课程后，您将可以
- 了解 ABB 工业机器人工作原理及系统架构
- 能够使用示教器操作机器人
- 能够在手动模式下使用示教器操作机器人，修改程序中的位置点
- 能够加载，运行 RAPID 程序
- 能够保存程序和备份系统
- 能够更新机器人零位

培训内容
- 工业机器人知识介绍
- ABB 工业机器人系统介绍
- ABB 示教器操作介绍
- 使用示教器操作机器人，修改位置点
- 调用系统中的例行程序
- 程序备份和系统备份方法介绍，实践
- 机器人零位更新方法介绍，实践

课程信息
- 培训时间: 2 天
- 学员人数: 4-10 人 / 班

Applicable Robot Type
- ABB Robot: IRB 14000

Target Groups
- Operator
- mechanical engineer
- maintenance engineer

Prerequisites
- None

After this training, you are able to
- Understand industrial robot structure and working principle
- Be able to use TPU move robot
- Be able to modify position in program in manual mode by TPU
- Be able to Load and run the program
- Be able to Save program and backup system
- Update robot zero position

Contents
- Industrial robot introduction
- ABB industrial robot system introduction
- Introduce TPU interface
- Operating robot by TPU, modify position
- Calling routine
- Save program and backup system, with excises
- Introduction of Updating robot revolution counter, with excises

Information
- Duration: 2 days
- Number of Participants: 4-10 persons

CNIR103 IRC5 机器人现场安装

CNIR103 IRC5 Installation instruction of Industrial robot

适用机型
- ABB 工业机器人（培训以 IRB 6640 为例）

课程对象
- 调试工程师
- 设备维护工程师

知识要求
- 电气基础知识
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人系统基本组成
- 掌握工业控制柜及机器人基本吊装知识
- 掌握工业控制柜、机器人安装知识
- 能够独立完成电气接线
- 能够简单移动机器人

培训内容
- ABB 机器人安全操作介绍
- 工业机器人系统介绍
- 控制柜及机器人吊装说明及实践
- 控制柜及机器人安装说明及实践
- 机器人系统相关电气连接讲解
- 手动操作机器人介绍与实践

课程信息
- 培训时间： 1 天
- 学员人数： 4-8 人 / 班

Applicable Robot Type
- ABB industrial Robot（using IRB 6640 in training）

Target Groups
- Commissioning engineer
- Facility engineer

Prerequisites
- Basic knowledge of electric
- Basic knowledge of mechanics

After this training, you are able to
- Know the basic components of ABB Industrial robot system
- Understand the hoisting method of industrial robot
- Understand how to install the cabinet and robot on site
- Refer to the manual, finish the electrical installation independently
- Move the robot basically

Contents
- Safety instruction of Industrial robot
- Industrial robot system introduction
- Instruction and practice of cabinet & robot's hoisting
- Instruction and practice of cabinet & robot's Installation
- Instruction and practice of electrical Installation
- Present how to move the robot quickly

Information
- Duration： 1 days
- Number of Participants： 4-8 persons

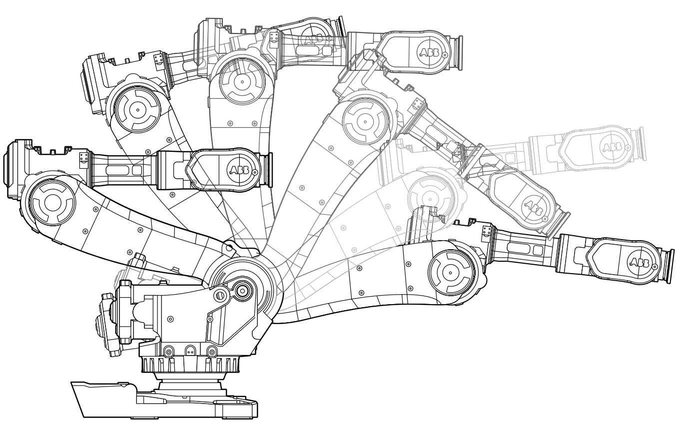
编程
Programming

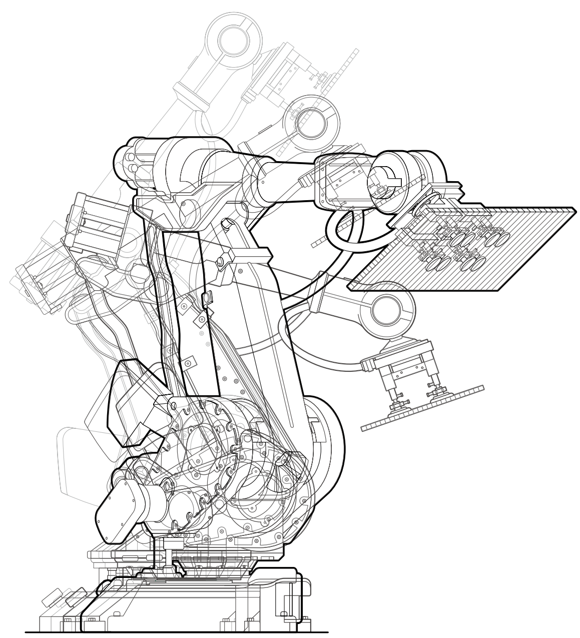
工业机器人

- CNIR201 IRC5 机器人基础编程
- CNIR202 IRC5 机器人高级编程
- CNIR203 IRB 14000 编程
- CNIR204 S4C + 基础编程
- CNIR205 S4C + 高级编程
- CNIR206 VWRS 基础编程
- CNIR207 总线配置与视觉通讯

Industry Robot

- CNIR201 IRC5 Basic Programming
- CNIR202 IRC5 Advanced Programming
- CNIR203 IRB 14000 Basic Programming
- CNIR204 S4C + Basic Programming
- CNIR205 S4C + Advanced Programming
- CNIR206 VWRS Basic Programming
- CNIR207 Industry Network Configuration And Vision Application





CNIR201 IRC5 基础编程
CNIR201 IRC5 Basic Programming

适用机型
- 使用 IRC5 控制系统的所有机型

课程对象
- 操作工
- 电气维修工程师
- 机械维修工程师
- 项目 / 工艺工程师

知识要求
- 基本英语阅读能力

完成此课程后，您将可以
- 了解 ABB 机器人功能架构
- 理解机器人工作中涉及到的各种坐标
- 使用示教器，在手动模式下移动机器人
- 定义编程需要用到的坐标系
- 了解 RAPID 语言结构并能调试简单例程
- 读、写简单程序，修改程序中的点
- 定义，修改机器人 I/O 信号
- 理解并使用各种重启方式
- 备份 / 加载程序，备份 / 恢复系统
- 用 RobotStudio Online 功能配置安装机器人系统
- 对机器人进行校准和转速计数器更新

课程内容
- 机器人操作安全
- ABB 工业机器人系统介绍
- 手动模式下的机器人操作
- 工业机器人坐标系统
- RAPID 编程语言介绍及其基本指令
- I/O 信号介绍及配置
- 机器人系统重启指令介绍
- 程序保存，系统备份
- 机器人系统配置及安装
- 校正方式介绍
- 操作实践

课程信息
- 培训时间: 5 天
- 学员人数: 4-10 人 / 班

Applicable Robot Type
- All the ABB robot with IRC5 controller

Target Groups
- Operator
- Electrical maintenance engineer
- Mechanical maintenance engineer
- Project/Process engineer

Prerequisites
- Basic English skill

After this training, you are able to
- Understand the structure and principle of ABB robot
- Understand different kinds of coordinate in robot system
- Operate robot with TPU in manual mode
- Use tool data and work-object data skillfully
- Understand RAPID structure, debug the simple program
- Modify position in the program with TPU
- Read and write some simple routines, Configure I/O signals
- Use different restart modes
- Save and load program. Backup and restore system
- Modify and install the robot system with RobotStudio Online
- Update revolution counter, implement robot calibration

Contents
- Safety instruction
- ABB industry robot introduction
- Operating the robot in manual mode
- Robot coordinate systems
- Basic knowledge of RAPID
- Writing programs with the basic instructions
- I/O signal configuration
- Introduction of restart modes
- System backup and restore
- Robot system modification and installation
- Calibration: revolution counter update and fine calibration

Information
- Duration: 5 days
- Number of participants: 4-10 persons

CNIR202 IRC5 高级编程
CNIR202 IRC5 Advanced Programming

适用机型
- 使用 IRC5 控制系统的所有机型

课程对象
- 项目 / 工艺工程师
- 电气维修工程师

知识要求
- IRC5 基础编程培训
- 了解机器人的应用

完成此课程后，您将可以
- 使用 RAPID 手册帮助编程
- 阅读较复杂的 RAPID 程序
- 了解数据的类型、性质及使用范围
- 了解多任务程序结构
- 编写带参数的例行程序
- 编写自定义函数
- 了解 WorldZone
- 掌握中断处理指令，并能够编写简单的中断类型的例行程序
- 掌握错误处理指令，并能够编写简单的错误处理程序

培训内容
- RAPID 程序结构
- 数据类型
- 例行程序的三种类型：Function，trap，procedure
- 多任务程序
- 中断处理
- 错误处理
- Worldzone 功能介绍
- 相关案例分析

课程信息
- 培训时间： 5 天
- 学员人数： 4-10 人 / 班

Applicable Robot Type
- All the ABB robots with IRC5 controller

Target Groups
- Project/Process engineer
- Electrical maintenance engineer

Prerequisites
- IRC5 Basic Programming
- Be familiar with field application

After this training , you are able to
- Work with RAPID manual
- Read some complex programs
- Understand the usage of data type
- Understand structure of multitask program
- Create background tasks
- Create a procedure with parameters
- Create customized functions, Create customized data types
- Use WorldZone
- Program with complex instruction, such as Interrupt Handler, ERROR Handler

Contents
- Structure of RAPID program
- Data type
- Different type of routine: Function, trap, procedure
- Introduction of Multitask
- Interrupt Handler
- Error handler
- WorldZone
- Case study Practice

Information
- Duration: 5 days
- Number of participants: 4-10 persons

CNIR203 IRB 14000 编程
CNIR203 IRB 14000 Basic Programming

适用机型
- ABB IRB 14000 工业机器人

课程对象
- 操作人员
- 机械工程师
- 电气工程师
- 项目 / 工艺工程师

知识要求
- 无

完成此课程后，您将可以
- 理解机器人工作中涉及到的各种坐标
- 使用示教器，在手动模式下移动机器人
- 定义编程需要用到的坐标系
- 了解 RAPID 语言结构并能调试简单例程
- 读、写简单程序，修改程序中的点
- 定义，修改机器人 I/O 信号
- 备份 / 加载程序，备份 / 恢复系统
- 用 RobotStudio Online 功能配置安装机器人系统
- 对机器人进行校准和转速计数器更新

课程内容
- ABB 工业机器人系统介绍
- 手动模式下的机器人操作
- 工业机器人坐标系统
- 机器人坐标系设置及 TCP 标定
- RAPID 编程语言介绍及其基本指令
- I\O 信号介绍及配置
- 机器人系统重启指令介绍
- 程序保存，系统备份
- 机器人系统配置及安装
- 校正方式介绍

课程信息
- 培训时间： 5 天
- 学员人数： 4-10 人 / 班

Applicable Robot Type
- ABB Robot: IRB 14000

Target Groups
- Operator
- Mechanical engineer
- Electrical engineer
- Process/Project engineer

Prerequisites
- None

After this training, you are able to
- Understand ABB robot structure
- Operate robot by TPU in manual mode
- Define tooldata and work object data
- Understand rapid structure,debug simple program
- Modify position in program by TPU
- Read or write simple instructions
- Configure I/O signals
- Load and Save program, backup and restore system
- Update revolution counter

Contents
- Operation
- System introduction
- Robot coordinate systems
- Basic knowledge of RAPID
- Writing programs with the basic instructions
- I/O signal configuration
- Introduction of restart modes
- System backup and restore
- Robot system modification and installation
- Calibration: revolution counter update and fine calibration

Information
- Duration: 5 days
- Number of participants: 4-10 persons

CNIR204 S4C + 基础编程
CNIR204 S4C + Basic Programming

适用机型
- 使用 S4C+ 控制系统的所有机器人

课程对象
- 操作人员
- 机械工程师
- 电气工程师
- 项目 / 工艺工程师

知识要求
- 基本英语阅读能力

完成此课程后，您将可以
- 了解 ABB 机器人功能架构
- 理解机器人工作中涉及到的各种坐标
- 使用示教器，在手动模式下移动机器人
- 定义编程需要用到的坐标系
- 了解 RAPID 语言能调试简单程序
- 读、写简单程序，修改程序中的点
- 定义，修改机器人 I/O 信号
- 理解并使用各种重启方式
- 保存 / 加载程序，备份 / 恢复系统
- 对机器人进行校准和转数计数器更新

课程内容
- 机器人操作安全
- ABB 工业机器人系统介绍
- 手动模式下的机器人操作
- 工业机器人坐标系统
- RAPID 编程语言及其基本指令
- I/O 信号介绍及配置
- 机器人系统重启介绍
- 程序保存，系统备份
- 机器人系统配置及安装
- 校准方式介绍
- 操作实践

课程信息
- 培训时间: 5 天
- 学员人数: 4-10 人 / 班

Applicable Robot Type
- All the ABB robot with S4C+ controller

Target Groups
- Operator
- Electrical maintenance engineer
- Mechanical maintenance engineer
- Project/Process engineer

Prerequisites
- Basic English skill

After this training, you are able to
- Understand the structure and principle of ABB robot
- Understand different kinds of coordinate in robot system
- Operate robot with TPU in manual mode
- Use tool data and work-object data skillfully
- Understand RAPID structure, debug the simple program
- Modify position in the program with TPU
- Read and write some simple routines Configure I/O signals
- Use different restart modes
- Save and load program. Backup and restore system
- Update revolution counter, implement robot calibration

Contents
- Safety instruction
- ABB industry robot introduction
- Operating the robot in manual mode
- Robot coordinate systems
- Basic knowledge of RAPID
- Writing programs with the basic instructions
- I/O signal configuration
- Introduction of restart modes
- System backup and restore
- Robot system modification and installation
- Calibration: revolution counter update and fine calibration

Information
- Duration: 5 days
- Number of participants: 4-10 persons

CNIR205 S4C + 高级编程
CNIR205 S4C + Advanced Programming

适用机型
- 使用 S4C+ 控制系统的所有机器人

课程对象
- 电气维修工程师
- 项目 / 工艺工程师

知识要求
- S4C+ 基础编程培训
- 了解机器人的应用

完成此课程后，您将可以
- 使用 RAPID 手册帮助编程
- 阅读较复杂的 RAPID 程序
- 了解数据的类型、性质及使用范围
- 了解多任务程序结构
- 编写带参数的例行程序，编写自定义函数
- 了解 WorldZone
- 掌握中断处理指令，并能够编写简单的中断类型的例行程序
- 掌握错误处理指令，并能够编写简单的错误处理程序

课程内容
- RAPID 程序结构
- 数据类型
- 例行程序的三种类型：Function, trap, procedure
- 多任务程序
- 中断处理
- 错误处理
- Worldzone 功能介绍
- 相关案例分析
- 操作实践

课程信息
- 培训时间：5 天
- 学员人数：4-10 人 / 班

Applicable Robot Type
- All the ABB robot with S4C+ controller

Target Groups
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- S4C+ Basic Programming
- Be familiar with field application

After this training, you are able to
- Work with RAPID manual
- Read some complex programs
- Understand the usage of data type
- Understand structure of multitask program
- Create a procedure with parameters
- Create customized functions
- Use WorldZone
- Program with complex instruction, such as Interrupt Handler, ERROR Handler

Contents
- Structure of RAPID program
- Data type
- Different type of routine: Function, trap, procedure
- Introduction of Multitask
- Interrupt Handler
- Error handler
- WorldZone
- Case study
- Practice

Information
- Duration: 5 days
- Number of participants: 4-10 persons

CNIR206 VWRS 基础编程
CNIR206 VWRS Basic Programming

适用机型
- 使用 VWRS 的 ABB 机器人

课程对象
- 项目 / 工艺工程师
- 设备维护工程师

知识要求
- 基本英语阅读能力

完成此课程后，您将可以
- 了解 ABB 机器人系统组成
- 理解机器人工作中涉及到的各种坐标
- 使用示教器，在手动模式下移动机器人
- 了解 VWRS 标准下的 RAPID 语言结构并能调试简单例程
- 备份 / 加载程序，备份 / 恢复系统
- 对机器人进行转速计数器更新

培训内容
- 系统安全
- IRC5 系统介绍
- ABB 示教器标准菜单及功能介绍
- 手动操作机器人
- ABB 机器人坐标系介绍及定义
- RAPID 程序结构与基本指令介绍
- 系统备份与恢复
- 转数计数器更新
- VWRS 自动生产界面常规功能介绍
- VWRS RAPID 编程基础入门
- VWRS 应用调试窗口介绍及基本指令入门
- VWRS 基本信号介绍
- Profinet 信号配置

课程信息
- 培训时间: 5 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB robot with VWRS

Target group
- Project/Process engineer
- Maintenance engineer

Prerequisites
- Basic English skill

After this training, you are able to
- Understand the structure of ABB robot
- Understand coordinates in robot system
- Operate robot with TPU in manual mode
- Know basic RAPID in VWRS, debug the simple program
- Save and load program. Backup and restore system
- Update revolution counter

Contents
- System safety
- IRC5 system introduction
- ABB FPU menu and function introduction
- Operating robot in manual mode
- ABB coordinate systems
- Structure & basic instruction of RAPID
- System backup & restore
- Revolution counter update
- Production Screen（VWRS standards）
- Basic knowledge of RAPID Programming（VWRS standards
- Application service windows and basic instructions in VWRS
- I/O Signals（VWRS standards）
- Profinet configuration in robot

Information
- Duration: 5 Days
- Number of participants: 4-8 Persons

CNIR207 总线配置与视觉通讯
CNIR207 Industry Network Configuration And Vision Application

适用机型
• 具有相关通讯选项的 IRC5 控制系统机器人

课程对象
• 机器人工程师

知识要求
• 机器人基础编程培训或具有 ABB 机器人相关知识
• 了解常用现场总线，了解机器人视觉应用原理

完成此课程后，您将可以
• 配置 ABB 机器人基于 PROFINET 的总线通讯
• 配置 ABB 机器人基于 Ethernet/IP 的总线通讯
• 配置 ABB 机器人基于 Devicenet 的总线通讯
• 配置 ABB 机器人基于 CC-LINK 的总线通讯
• ABB 机器人与外部设备 socket 通讯程序编写
• ABB 集成视觉应用
• ABB 机器人与智能相机视觉应用

培训内容
• 基于 PROFINET 总线的机器人配置
  - 机器人作为 Controller，添加 Device
  - 机器人作为 Device 与 PLC 通讯
• 基于 Ethernet/IP 总线的机器人配置
  - 机器人作为 Scanner，添加 Adapter
  - 机器人作为 Adapter 与 Scanner 通讯
• 基于 DeviceNet 总线的机器人配置
  - 机器人作为从站 Slave 与 PLC 通讯
  - 两台机器人 DeviceNet 通讯
• 基于 CC-LINK 总线的机器人配置
• Socket 通讯与编程
• ABB 集成视觉应用
  - 坐标系校准与视觉设置
  - 机器人程序
• ABB 机器人与智能相机视觉应用
  - 智能相机软件介绍与使用
  - 机器人与智能相机的 socket 通讯与处理
  - 基于智能相机的视觉引导与抓取

课程信息
• 培训时间： 4 天

Applicable Robot Type
• ABB robots with communication options

Target Groups
• Robot Engineers

Prerequisites
• Basic programming and knowledge of industry network and vision application

Completed this course, you may able to:
• Configure ABB robot in PROFINET network
• Configure ABB robot in Ethernet/IP network
• Configure ABB robot in DeviceNet network
• Configure ABB robot in CC-LINK network
• Socket communication program with ABB robot
• Use ABB robot integrated vision application
• Use Intelligent camera with ABB robot

Contents
• PROFINET configuration
  - Robot as Controller and Robot as Device
  - Communication between 2 ABB robots
• Ethernet/IP configuration
  - Robot as Scanner and robot as adapter
• DeviceNet configuration
  - Robot as Slave on the network
  - Communication between 2 ABB robots
• CC-LINK configuration
• Socket communication and programming
• ABB Integrated vision
  - Coordinate Calibration
  - Vision settings and robot programming
• ABB robot with Industrial Intelligent Camera
  - Intelligent vision software introduction and application
  - Socket communication between robot and Intelligent camera
  - Robot programming with vision guide

Information
• Duration： 4 days

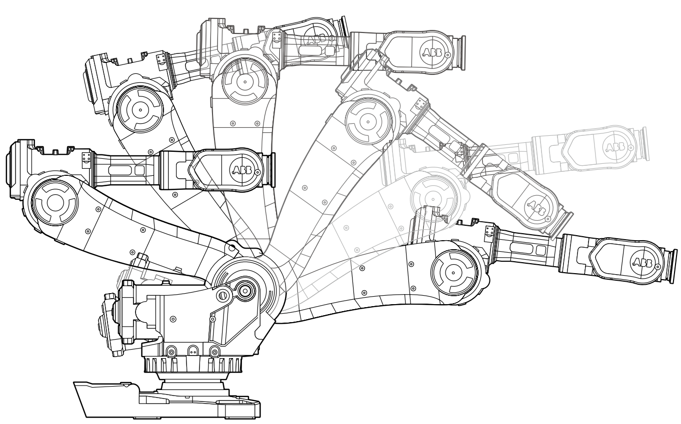
电气原理及故障处理
Electrical Principle and Troubleshooting

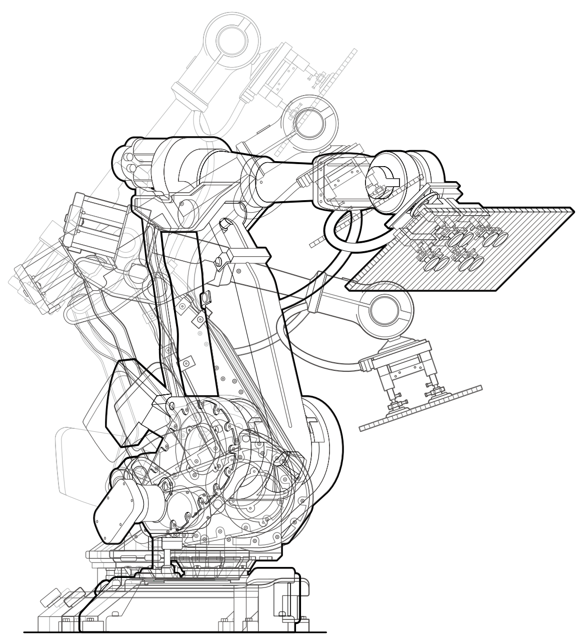
工业机器人

- CNIR301 IRC5 机器人电气原理 & 故障排除
- CNIR303 IRC5 Compact 电气原理
- CNIR305 IRB 14000 电气原理
- CNIR306 BMW L7 IRC5 电气原理及故障排除
- CNIR307 IDFP 电气原理
- CNIR308 BMW G2X IRC5 电气原理及故障排除

Industry Robot

- CNIR301 IRC5 Electrical Principle & Troubleshooting
- CNIR303 IRC5 Compact Electrical Principle & Troubleshooting
- CNIR305 IRB 14000 Electrical Maintenance
- CNIR306 BMW L7 IRC5 Electrical Principle & Troubleshooting
- CNIR307 IDFP Electrical Principle
- CNIR308 BMW G2X IRC5 Electrical Principle & Troubleshooting





CNIR 301 IRC5 机器人电气原理 & 故障排除

CNIR301 IRC5 Electrical Principle & Troubleshooting

适用机型
- 使用 IRC5 单柜 / 双柜控制器的所有机型

课程对象
- 电气维修工程师
- 项目 / 工艺工程师

知识要求
- IRC5 操作培训

完成此课程后，您将可以
- 了解 IRC5 机器人系统结构
- 熟悉 IRC5 机器人各功能模块间关系及工作原理
- 读懂手册中的电路图
- 理解 IRC5 机器人中各电气模块功能
- 独立完成电气设备日常保养维护
- 备件替换
- 熟悉 IRC5 机器人安全面板、主机箱中的指示灯状态含义
- 熟悉 IRC5 机器人示教器显示的故障代码含义
- 在熟悉机器人电路的基础上，能够根据 LED 状态和示教器上的告警信息定位故障
- 了解机器人故障处理的基本思路和常用方法
- 掌握不同启动方式的用法
- 能够独立处理常见故障

课程内容
- 机器人操作安全
- IRC5 机器人系统介绍
- IRC5 机器人中各电气模块功能及原理介绍。包括电源系统，计算机系统，驱动系统，总线与 I/O 系统，冷却系统，安全面板和 SMB 板
- 电路图讲解
- 机器人中各电气模块维护保养注意事项
- IRC5 机器人安全面板、主机箱中的指示灯状态介绍
- IRC5 机器人故障代码介绍
- 机器人不同启动方式的原理及介绍
- IRC5 机器人各电气模块常见故障介绍及案例分析
- 故障排除实践。在模拟的故障场景下定位故障并排除

课程信息
- 培训时间: 4 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB robot with IRC5 controller, including single cabinet, dual cabinet

Target Groups
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- IRC5 Operation

After this training, you are able to
- Be familiar with the structure of IRC5 controller
- Be familiar with the interfaces between the functional units
- Work with the circuit diagrams in the manual
- Understand the principle of each unit
- Handle the daily maintenance of electrical units independently
- Replace the failure part independently
- Be familiar with the LED status
- Be familiar with the error code
- Diagnose the faults, according to LED status and error code
- Know the basic method to diagnose the faults
- Know the usage of different restart mode
- Troubleshoot the IRC5 robot independently

Contents
- Safety instruction
- IRC5 robot system introduction
- The principle of each electrical unit, including power system,computer system, driver system, bus & I/O system, cooling

system, panel board and SMB
- Circuit diagram explanation
- Introduction of daily maintenance of each unit
- Introduction of LED status in the controller cabinet
- Introduction of IRC5 error code
- Introduction the usage of restart mode in troubleshooting
- Common faults of each electrical unit in IRC5 robot Case study
- Practice. Analyze and diagnose the faults set by the trainer

Course information
- Duration: 4 days
- Number of participants: 4-8 persons

CNIR303 IRC5C 电气原理以及故障排除
CNIR303 IRC5C Electrical Principle & Troubleshooting

适用机型
• 使用 IRC5C 紧凑柜的所有机型

课程对象
• 电气维修工程师
• 项目 / 工艺工程师

知识要求
• IRC5C 操作培训

完成此课程后，您将可以
• 了解 IRC5C 机器人系统结构
• 熟悉 IRC5C 机器人各功能模块间关系及工作原理
• 读懂手册中的电路图
• 理解 IRC5C 机器人中各电气模块功能
• 独立完成电气设备日常保养维护
• 备件替换
• 熟悉 IRC5C 机器人安全面板、主机箱中的指示灯状态含义
• 熟悉 IRC5C 机器人示教器显示的故障代码含义
• 在熟悉机器人电路的基础上，能够根据 LED 状态和示教器上的告警信息定位故障
• 了解机器人故障处理的基本思路和常用方法
• 掌握不同启动方式的用法
• 能够独立处理常见故障

课程内容
• 机器人操作安全
• IRC5C 机器人系统介绍
• IRC5C 机器人中各电气模块功能及原理介绍。包括电源系统，计算机系统，驱动系统，总线与 I/O 系统，冷却系统，安全面板和 SMB 板
• 电路图讲解
• 机器人中各电气模块维护保养注意事项
• IRC5C 机器人安全面板、主机箱中的指示灯状态介绍
• IRC5C 机器人故障代码介绍
• 机器人不同启动方式的原理及介绍
• IRC5C 机器人各电气模块常见故障介绍及案例分析
• 故障排除实践。在模拟的故障场景下定位故障并排除

课程信息
• 培训时间: 4 天
• 学员人数: 4-8 人 / 班

Applicable Robot Type
• All the ABB robot with IRC5C compact controller

Target Groups
• Electrical maintenance engineer
• Project/Process engineer

Prerequisites
• IRC5C Operation

After this training, you are able to
• Be familiar with the structure of IRC5C controller
• Be familiar with the interfaces between the functional units
• Work with the circuit diagrams in the manual
• Understand the principle of each unit
• Handle the daily maintenance of electrical units independently
• Replace the failure part independently
• Be familiar with the LED status
• Be familiar with the error code
• Diagnose the faults, according to LED status and error code
• Know the basic method to diagnose the faults
• Know the usage of different restart mode
• Troubleshoot the IRC5C robot independently

Contents
• Safety instruction
• IRC5C robot system introduction
• The principle of each electrical unit, including power system, computer system, driver system, bus & I/O system, coolingsystem, panel board and SMB
• Circuit diagram explanation
• Introduction of daily maintenance of each unit
• Introduction of LED status in the controller cabinet
• Introduction of IRC5C error code
• Introduction the usage of restart mode in troubleshooting
• Common faults of each electrical unit in IRC5C robot Case study
• Practice. Analyze and diagnose the faults set by the trainer

Course information
• Duration: 4 days
• Number of participants: 4-8 persons

CNIR305 IRB 14000 电气原理
CNIR305 IRB 14000 Electrical Maintenance

适用机型
- ABB IRB 14000 工业机器人

课程对象
- 电气工程师
- 项目工程师

知识要求
- IRB 14000 操作培训

完成此课程后，您将可以
- 了解 IRB 14000 机器人系统结构
- 熟悉 IRB 14000 机器人各功能模块间关系及工作原理
- 读懂手册中的电路图，理解各电气模块功能
- 完成电气设备日常保养维护和备件替换

课程内容
- IRB 14000 系统介绍
- IRB 14000 电气模块功能及原理介绍
- 电路图讲解
- 机器人中各电气模块维护保养注意事项
- 操作实践

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB Robot: IRB 14000

Target Groups
- Project engineer
- Electrical engineer

Prerequisites
- IRB 14000 Operation

After this training, you are able to
- Understand IRB 14000 system introduction
- Understand IRB 14000 units' function
- Be able to read circuit diagram
- Be able to do daily maintenance and replace fault unit

Contents
- IRB 14000 robot system introduction
- The principle of each electrical unit
- Circuit diagram explanation
- Introduction of daily maintenance of each unit
- Replacement of the failure part Practice

Course information
- Duration: 2 days
- Number of participants: 4-8 persons

CNIR306 BMW L7-IRC5 电气原理及故障排除
CNIR306 BMW L7-IRC5 Electrical Principle & Troubleshooting

适用机型
- BMW L7 项目的 IRC5 控制器

课程对象
- 电气维修工程师
- 项目 / 工艺工程师

知识要求
- IRC5 操作培训

完成此课程后，您将可以
- 了解 IRC5 机器人系统结构
- 熟悉 IRC5 机器人各功能模块间关系及工作原理
- 读懂手册中的电路图，理解 IRC5 机器人中各电气模块功能
- 独立完成电气设备日常保养维护和备件替换
- 读懂 L7 项目的控制器电路图

培训内容
- 机器人操作安全
- IRC5 机器人系统介绍
- IRC5 机器人中各电气模块功能及原理介绍。包括电源系统，计算机系统，驱动系统，总线与 I/O 系统，冷却系统，安全面板和 SMB 板
- 电路图讲解
- 机器人中各电气模块维护保养注意事项
- L7 补充电路图讲解
- 操作实践

课程信息
- 培训时间: 5 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- IRC5 controller for BMW L7 project

Target Groups
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- IRC5 Operation

After this training, you are able to
- Be familiar with the structure of IRC5 controller
- Be familiar with the interfaces between the functional units
- Work with the circuit diagrams in the manual. Understand the principle of each unit
- Handle the daily maintenance of electrical units independently
- Replace the failure part independently
- Work with the supplemental customization circuit diagram

Contents
- Safety instruction
- IRC5 robot system introduction
- The principle of each electrical unit, including power system, computer system, driver system, bus & I/O system, cooling system, panel board and SMB
- Circuit diagram explanation
- Introduction of daily maintenance of each unit
- Replacement of the failure part
- Supplemental customization circuit diagram explanation
- Practice

Course information
- Duration: 5 days
- Number of participants: 4-8 persons

CNIR307 IDFP 电气原理
CNIR307 IDFP Electrical Principle

适用机型
- 使用 IDFP 的 ABB 机器人

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 现场设备维护

知识要求
- IRC5 基础编程培训
- IRC5 电气原理培训
- IDFP 基础应用

完成此课程后，您将可以
- 了解 IDC 柜内电气构成
- 更换 IDC 柜内元器件

培训内容
- 操作安全
- IDC 控制柜电气原理介绍
- IDC 元器件更换
- Doser 电气简介
- 利用 RobView 优化参数
- 应用实践

课程信息
- 培训时间: 2 天
- 学员人数: 3-6 人 / 班

Applicable Robot Type
- ABB robot with IDFP

Target group
- Project/Process engineer
- Electrical maintenance engineer
- Site Equipment Maintenance Person

Prerequisites
- IRC5 Basic programming
- IRC5 Electrical Principle
- IDFP Basic Application

After this training, you are able to
- Understand IDC Electric Principle
- Change components in IDC

Contents
- Occupational health and safety
- IDC electric principle introduction
- Change components of IDC
- Doser electric principle introduction
- Optimize parameter using RobView
- Practice

Information
- Duration: 2 Days
- Number of participants: 3-6 Persons

CNIR308 BMW G2X IRC5 电气原理及故障排除
CNIR308 BMW G2X IRC5 Electrical Principle & Troubleshooting

适用机型
• BMW G2X 项目的 IRC5 控制器

课程对象
• 电气维修工程师
• 项目 / 工艺工程师

知识要求
• IRC5 操作培训

完成此课程后，您将可以
• 了解 IRC5 机器人系统结构
• 熟悉 IRC5 机器人各功能模块间关系及工作原理
• 读懂手册中的电路图，理解 IRC5 机器人中各电气模块功能
• 独立完成电气设备日常保养维护和备件替换
• 读懂 G2X 项目的控制器电路图
• 了解 L7 与 G2X 项目标准在 IRC5 控制器中的区别

培训内容
• 机器人操作安全
• IRC5 机器人系统介绍
• IRC5 机器人中各电气模块功能及原理介绍。包括电源系统，计算机系统，驱动系统，总线与 I/O 系统，冷却系统，安全面板和 SMB 板
• 电路图讲解
• 机器人中各电气模块维护保养注意事项
• G2X 补充电路图讲解
• L7 与 G2X 标准的 IRC5 控制器差异
• 操作实践

课程信息

• 培训时间：	5 天
• 学员人数：	4-8 人 / 班

Applicable Robot Type
• IRC5 controller for BMW G2X project

Target Groups
• Electrical maintenance engineer
• Project/Process engineer

Prerequisites
• IRC5 Operation

After this training, you are able to
• Be familiar with the structure of IRC5 controller
• Be familiar with the interfaces between the functional units
• Work with the circuit diagrams in the manual. Understand the principle of each unit
• Handle the daily maintenance of electrical units independently
• Replace the failure part independently
• Work with the supplemental customization circuit diagram
• Difference between L7 and G2X project

Contents
• Safety instruction
• IRC5 robot system introduction
• The principle of each electrical unit, including power system, computer system, driver system, bus & I/O system, cooling system, panel board and SMB
• Circuit diagram explanation
• Introduction of daily maintenance of each unit
• Replacement of the failure part
• Supplemental customization circuit diagram explanation
• Difference between L7 and G2X project
• Practice

Course information

• Duration:	5 days
• Number of participants:	4-8 persons

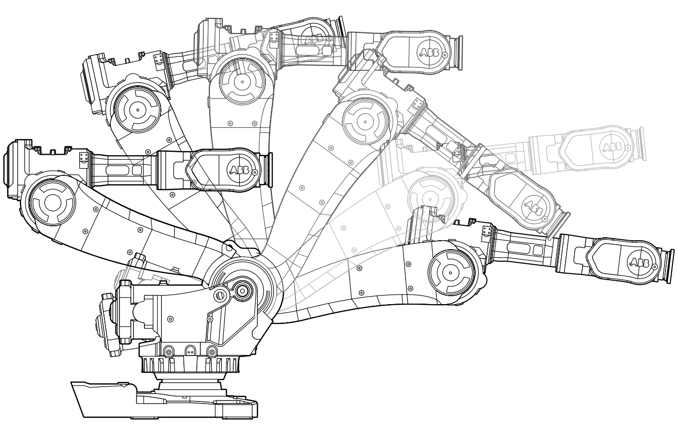
机械维修
Mechanical Maintenance

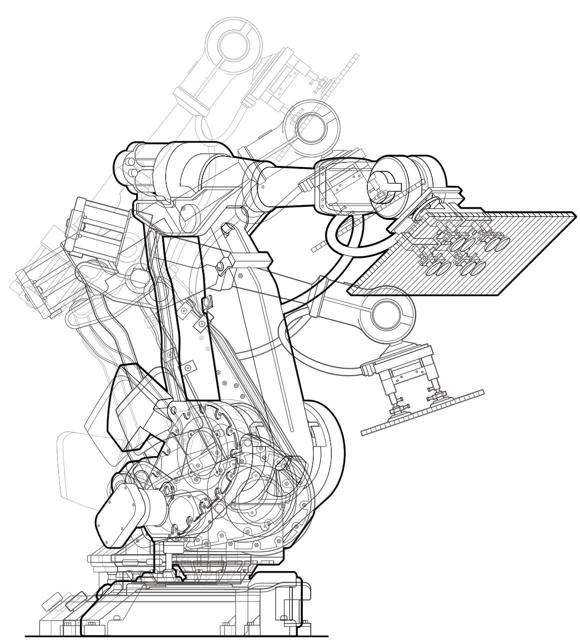
工业机器人

- CNIR401 IRB 6640 机械维修（兼容 IRB 6620）
- CNIR402 IRB 2400 机械维修
- CNIR403 IRB 360 机械维修（兼容 IRB 340）
- CNIR404 IRB 460 机械维修（兼容 IRB 260/IRB 660/IRB 760）
- CNIR405 IRB 1600 机械维修
- CNIR406 IRB 120 机械维修
- CNIR407 IRB 1200 机械维修
- CNIR408 IRB 140 机械维修
- CNIR409 IRB 1520 机械维修
- CNIR410 IRB 14000 机械维修
- CNIR411 IRB 1410 机械维修（兼容 IRB 1400）
- CNIR412 IRB 2600 机械维修（兼容 IRB 4600）
- CNIR413 IDFP 机械维修
- CNIR414 IRB 6700 机械维修

Industry Robot

- CNIR401 IRB 6640 Mechanical (Compatibility IRB 6620)
- CNIR402 IRB 2400 Mechanical Maintenance
- CNIR403 IRB 360 Mechanical (Compatibility IRB 340)
- CNIR404 IRB 460 Mechanical (Compatibility IRB 260/IRB 660/IRB 760)
- CNIR405 IRB 1600 Mechanical Maintenance
- CNIR406 IRB 120 Mechanical Maintenance
- CNIR407 IRB 1200 Mechanical Maintenance
- CNIR408 IRB 140 Mechanical Maintenance
- CNIR409 IRB 1520 Mechanical Maintenance
- CNIR410 IRB 14000 Mechanical Maintenance
- CNIR411 IRB 1410 Mechanical Maintenance (Compatibility IRB 1400)
- CNIR412 IRB 2600 Mechanical Maintenance (Compatibility IRB 4600)
- CNIR413 IDFP Mechanical Maintenance
- CNIR414 IRB 6700 Mechanical Maintenance





CNIR401 IRB 6640 机械维修
CNIR401 IRB 6640 Mechanical Maintenance

适用机型
- ABB 大型机器人如：
  IRB 6640, IRB 6620

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人齿轮箱、平衡装置
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人齿轮箱、平衡装置更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间： 4 天
- 学员人数： 4-8 人 / 班

Applicable Robot Type
- ABB's large manipulators:
  IRB 6640, IRB 6620

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge of mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the gearboxes (axis 1 - axis 6) independently Refer to the manual, replace the balancing device
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables, Replacement of gearboxes, Replacement of balancing device
- Fine calibration
- Replacement of gearboxes Oil and Practice

Information
- Duration: 4 days
- Number of participants: 4-8 persons

CNIR402 IRB 2400 机械维修
CNIR402 IRB 2400 Mechanical Maintenance

适用机型
- ABB 中型机器人如：
  IRB 2400, IRB 4400

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人齿轮箱、平衡装置
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人齿轮箱、平衡装置更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间： 3 天
- 学员人数： 4-8 人 / 班

Applicable Robot Type
- ABB IRB 2400, IRB 4400

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the gearboxes (axis 1 - axis 6) independently Refer to the manual, replace the balancing device
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables Replacement of gearboxes
- Replacement of balancing device Replacement of gearboxes Oil
- Fine calibration
- Practice

Information
- Duration: 3 days
- Number of participants: 4-8 persons

CNIR403 IRB 360 机械维修
CNIR403 IRB 360 Mechanical Maintenance

适用机型
- IRB 360, IRB 340

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人手臂系统、齿轮箱
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人手臂系统、齿轮箱更换方法讲解与实践
- 机器人精校准方法介绍与实践

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB 360，IRB 340

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the gearboxes and arm system independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of arm system and gearboxes
- Fine calibration Practice

Information
- Duration: 2 days
- Number of participants: 4-8 persons

CNIR404 IRB 460 机械维修
CNIR404 IRB 460 Mechanical Maintenance

适用机型
- ABB 四轴机器人：
  IRB 460, IRB 260, IRB 660, IRB 760

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人、齿轮箱
- 参照手册，独立更换机器人连杆系统
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人齿轮箱更换方法讲解与实践
- 机器人连杆系统更换方法讲解及实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间： 4 天
- 学员人数： 4-8 人 / 班

Applicable Robot Type
- ABB IRB 460, IRB 260, IRB 660, IRB 760

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the gearboxes independently
- Refer to the manual, replace the linkage system
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of gearboxes
- Replacement of linkage system
- Replacement of gearboxes Oil
- Fine calibration Practice

Information
- Duration: 4 days
- Number of participants: 4-8 persons

CNIR405 IRB 1600 机械维修
CNIR405 IRB 1600 Mechanical Maintenance

适用机型
- IRB 1600

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人齿轮箱
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人齿轮箱更换方法讲解与实践
- 机器人精校准方法介绍与实践

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB 1600

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the gearboxes independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of gearboxes
- Fine calibration Practice

Information
- Duration: 2 days
- Number of participants: 4-8 persons

CNIR406 IRB 120 机械维修
CNIR406 IRB 120 Mechanical Maintenance

适用机型
- IRB 120

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握 IRB120 本体常用维护保养知识
- 参照手册，独立拆装机器人本体电缆
- 参照手册，独立更换机器人各轴电机
- 参照手册，独立更换机器人上臂下臂
- 能够借助设备对机器人做精校准

培训内容
- ABB 机器人安全操作规范
- IRB120 硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 机器人本体电缆更换步骤讲解及实践
- 机器人各轴电机及齿轮箱更换方法讲解及实践
- 机器人上臂下臂更换方法讲解与实践
- 机器人精校准方法介绍与实践

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB 120

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of IRB120
- Refer to the manual, replace the motors
- Refer to the manual, replace the cablesindependently
- Refer to the manual, replace the upper arm and lower arm independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of upper arm and lower arm
- Fine calibration
- Practice

Information
- Duration: 2 Days
- Number of participants: 4-8 Persons

CNIR407 IRB 1200 机械维修
CNIR407 IRB 1200 Mechanical Maintenance

适用机型
- IRB 1200

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握 IRB1200 本体常用维护保养知识
- 参照手册，独立拆装机器人本体电缆
- 参照手册，独立更换机器人各轴电机及齿轮箱
- 参照手册，独立更换机器人上臂下臂
- 参照手册，独立更换机器人基座
- 能够借助设备对机器人做精校准

培训内容
- ABB 机器人安全操作规范
- IRB1200 硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 机器人本体电缆更换步骤讲解及实践
- 机器人各轴电机及齿轮箱更换方法讲解及实践
- 机器人上臂下臂更换方法讲解与实践
- 机器人基座更换方法讲解及实践
- 机器人精校准方法介绍与实践

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB 1200

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of IRB1200
- Refer to the manual, replace the cables independently
- Referto the manual, replace the motors and gearboxes independently
- Refer to the manual, replace the upper arm and lower arm independently
- Refer to the manual, replace the base unit independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement the cables
- Replacement of the motors and gearboxes
- Replacement of upper arm and lower arm
- Replacement of the base unit
- Fine calibration Practice

Information
- Duration: 3 days
- Number of participants: 4-8 persons

CNIR408 IRB 140 机械维修
CNIR408 IRB 140 Mechanical Maintenance

适用机型
- IRB140

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握 IRB140 本体常用维护保养知识
- 参照手册，独立拆装机器人本体电缆
- 参照手册，独立更换机器人各轴电机
- 参照手册，独立更换机器人上臂下臂
- 能够借助设备对机器人做精校准

培训内容
- ABB 机器人安全操作规范
- IRB140 硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 机器人本体电缆更换步骤讲解及实践
- 机器人各轴电机及齿轮箱更换方法讲解及实践
- 机器人上臂下臂更换方法讲解与实践
- 机器人精校准方法介绍与实践

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB140

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of IRB140
- Refer to the manual, replace the motors
- Refer to the manual, replace the cables independently
- Refer to the manual, replace the upper arm and lower arm independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of upper arm and lower arm
- Fine calibration
- Practice

Information
- Duration: 2 days
- Number of participants: 4-8 persons

CNIR409 IRB 1520 机械维修
CNIR409 IRB 1520 Mechanical Maintenance

适用机型
- IRB1520

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握 IRB1520 本体常用维护保养知识
- 参照手册，独立拆装机器人本体电缆
- 参照手册，独立更换机器人各轴电机
- 参照手册，独立更换机器人上臂下臂
- 能够借助设备对机器人做精校准

培训内容
- ABB 机器人安全操作规范
- IRB1520 硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 机器人本体电缆更换步骤讲解及实践
- 机器人各轴电机及齿轮箱更换方法讲解及实践
- 机器人上臂下臂更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB1520

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of IRB1520
- Refer to the manual, replace the motors
- Refer to the manual, replace the cables independently
- Refer to the manual, replace the upper arm and lower arm independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of upper arm and lower arm
- Replacement of Gearboxes
- Replacement of gearboxes Oil
- Fine calibration Practice

Information
- Duration: 3 days
- Number of participants: 4-8 persons

CNIR410 IRB 14000 机械维修
CNIR410 IRB 14000 Mechanical Maintenance

适用机型
- ABB IRB 14000 工业机器人

课程对象
- 机械工程师
- 项目工程师

知识要求
- IRB 14000 操作培训

完成此课程后，您将可以
- 了解 IRB 14000 机器人系统结构
- 通过释放抱闸或者示教器移动机器人
- 参照手册，独立更换手臂
- 能够更新转数计数器
- 对 IRB 14000 进行日常维护

培训内容
- ABB 机器人本体硬件结构介绍
- 各轴电机、电缆更换步骤讲解
- 机器人手臂更换方法讲解与实践
- 机器人校准方法介绍与实践
- IRB 14000 日常维护介绍

课程信息
- 培训时间: 1 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB Robot: IRB 14000

Target Groups
- project engineer
- Mechanical engineer

Prerequisites
- IRB 14000 operation

After this training, you are able to
- Know the structure of IRB 14000
- Move robot by break release or TPU
- Refer to product manual, replace arm
- Update revolution counter
- Daily Maintenance

Contents
- Introduce IRB 14000 structure
- Introduce motor replace steps
- Introduce arm replacement
- Calibration introduce Practice
- IRB 14000 daily maintenance introduction

Information
- Duration: 1 days
- Number of participants: 4-8 persons

CNIR411 IRB 1410 机械维修（兼容 IRB 1400）
CNIR411 IRB 1410 Mechanical Maintenance (Compatibility IRB 1400)

适用机型
- IRB 1410（IRB 1400）

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人、齿轮箱
- 参照手册，独立更换机器人连杆系统
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人齿轮箱更换方法讲解与实践
- 机器人连杆系统更换方法讲解及实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- IRB 1410（IRB 1400）

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors
- Refer to the manual, replace the cables independently
- Refer to the manual, replace the gearboxes independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of gearboxes
- Replacement of linkage system
- Fine calibration
- Practice

Information
- Duration: 2 days
- Number of participants: 4-8 persons

CNIR412 IRB 2600 机械维修（兼容 IRB 4600）
CNIR412 IRB 2600 Mechanical Maintenance (Compatibility IRB 4600)

适用机型
- IRB 2600 (IRB 4600)

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人齿轮箱
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人齿轮箱更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB 2600 (IRB 4600)

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the gearboxes independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of gearboxes
- Fine calibration
- Practice

Information
- Duration: 3 days
- Number of participants: 4-8 persons

CNIR413 IDFP 机械维修
CNIR413 IDFP Mechanical Maintenance

适用机型
• 使用 IDFP 的 ABB 机器人

课程对象
• 项目 / 工艺工程师
• 机械维修工程师
• 现场设备维护

知识要求
• IRC5 基础编程培训
• IDFP 基础应用

完成此课程后，您将可以
• 独立维护 DOSER
• 根据实际更换 DOSER 电机及减速机齿轮

培训内容
• IDFP 介绍
• DOSER 介绍
• DOSER 电机介绍及更换
• DOSER 机械介绍及齿轮拆装
• 应用实践

课程信息
• 培训时间: 2 天
• 学员人数: 3-6 人 / 班

Applicable Robot Type
• ABB robot with IDFP

Target group
• Project/Process engineer
• Mechanical maintenance engineer
• Site Equipment Maintenance Person

Prerequisites
• IRC5 Basic programming
• IDFP Basic Application

After this training, you are able to
• DOSER Maintenance
• Change DOSER motor and gear

Contents
• Introduction of IDFP function
• Introduction of DOSER
• DOSER motor change
• DOSER gear change
• Practice

Information
• Duration: 2 Days
• Number of participants: 3-6 Persons

CNIR414 IRB6700 机械维修
CNIR414 IRB6700 Mechanical Maintenance

适用机型
- IRB 6700

课程对象
- 机械维修工程师

知识要求
- 机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人齿轮箱、平衡装置
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人齿轮箱、平衡装置更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息

• 培训时间:	4 天
• 学员人数:	4-8 人 / 班

Applicable Robot Type
- IRB 6700

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Robot operation training
- Basic knowledge of mechanics

After this training, you are able to
- Know the structure of ABB industry robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the gearboxes (axis 1 - axis 6) independently Refer to the manual, replace the balancing device
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables, Replacement of gearboxes,

Replacement of balancing device
- Fine calibration
- Replacement of gearboxes Oil and Practice

Information

• Duration:	4 days
• Number of participants:	4-8 persons

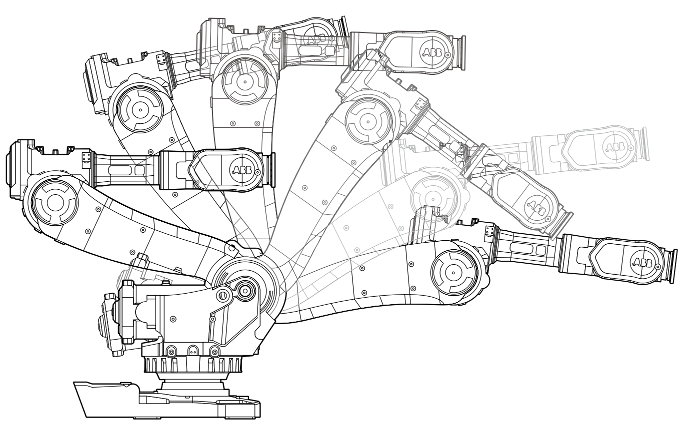
软件
Software

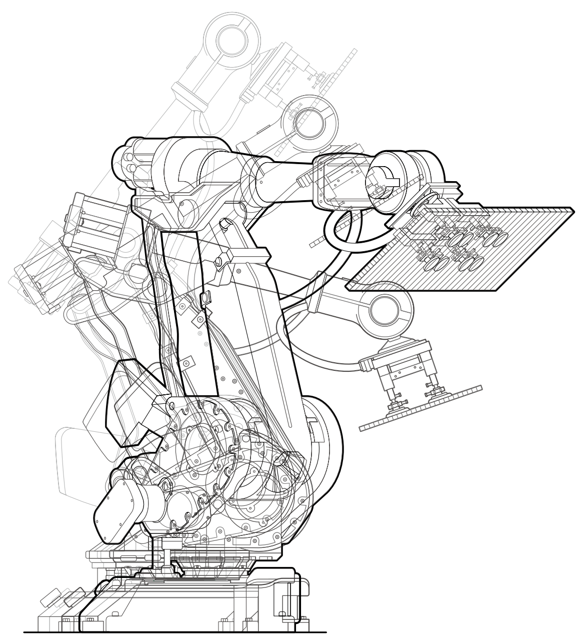
工业机器人

- CNIR501 RobotStudio 软件培训
- CNIR502 PickMaster 3

Industry Robot

- CNIR501 RobotStudio Software
- CNIR502 PickMaster 3





CNIR501 RobotStudio 软件培训
CNIR501 RobotStudio Software

适用机型
- ABB 所有机型

课程对象
- 项目 / 工艺工程师

知识要求
- 机器人基础编程培训

完成此培训后，您将可以
- 根据实际需要创建自己的工作站，及工作站内的组件
- 使用 RobotStudio 进行离线编程并仿真
- 模拟现场的动态效果并制作机器人工作视频
- 使用 ABB 机器人的可选项（MultiMove，外轴，输送链跟踪）进行编程
- 使用一些 RobotStudio 提供的工具进行信号分析
- 仿真 SafeMove 区域，定义相关参数
- 优化转弯区域。
- 导出工作站的布局
- 同时操作多台机器人

培训内容
- 创建工作站，创建系统
- 创建几何体和机械装置
- 创建工具、工件坐标系、路径点、轨迹
- 利用创建的组件和数据进行离线编程和仿真
- 使用 smart 组件模拟现场动态效果
- ABB 机器人的可选项的使用，包括 MultiMove；外轴（转台、导轨）；输送链跟踪
- 学习 RobotStudio 的实用功能。包括信号分析器；文件传输；制作自定义的视频录像
- 仿真 SafeMove
- 转弯区域可视化
- 工作站布局
- Job 功能

课程信息
- 培训时间: 5 天
- 学员人数: 6-10 人 / 班

Applicable Robot Type
- All the ABB robot

Target Groups
- Project/Process engineer

Prerequisites
- Basic programming

After this training , you are able to
- Build a station， Create and move the components
- Program offline
- Simulate the station with smart component, and make video
- Program with ABB additional option, including MultiMove, external axis ,conveyor tracking
- Analysis the movement of robot with tools in RobotStudio
- Take advantage of 3D environment to define the parameters
- Visualize zone data and automatically reduce them
- Export the station layout to a 2D drawing.
- Using jobs to operate on several robots simultaneously.

Contents
- Creating a station,Creating a system
- Creating the geometries and mechanical unit
- Creating Tool, WorkObject, Targets and Paths
- Programming offline and simulation
- Using SmartComponent to simulate the situation dynamically
- Program with ABB additional option, such as MutiMove, external axis, conveyor tracking
- Applications in RobotStudio. Such as signal analyzer , file transfer, sales tool, screen maker
- Visual SafeMove
- Zone Visualization
- Layout Tools
- Jobs

Information
- Duration: 5 days
- Number of participants: 6-10 persons

CNIR502 PickMaster 3
CNIR502 PickMaster 3

适用机型
- ABB 工业机器人

课程对象
- 项目调试工程师
- 工艺工程师

知识要求
- 基本电气知识
- 参加过 ABB 工业机器人基础编程培训

完成此培训后，您将可以
- 了解如何搭建包装线
- 掌握 I/O 配置知识
- 掌握如何在软件系统中配置包装线
- 掌握如何配置生产项目
- 学会如何配置远程集成服务
- 学会如何调试取放动作
- 掌握故障处理思路与方法

课程内容
- ABB 机器人安全操作介绍
- 电气安装介绍，如电脑，相机，编码器连接等
- 配置与校准包装线，相机，工作区等
- 配置生产项目，对象，摆放方式，包装箱属性等
- 配置远程集成服务
- 调试与故障排除讲解

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB industrial Robot

Target Groups
- Commissioning engineer
- Process engineer

Prerequisites
- Basic knowledge of electric
- Basic programming training of ABB robot

After this training , you are able to
- Know how to build the picking system
- Know how to configure the I/O signals
- Understand how to configure the line
- Understand how to configure the project
- Know how to configure Remote Integration Services
- Know how to tune the movement
- Trouble shooting

Contents
- Safety instruction of Industrial robot
- Electrical installation of PC, camera, encoder, etc.
- Configure and Calibrate the line, camera, work area, etc.
- Configure the project, items, patterns, containers, etc.
- Configure Remote Integration Services
- Commissioning and Trouble shooting

Information
- Duration: 3 days
- Number of participants: 4-8 persons

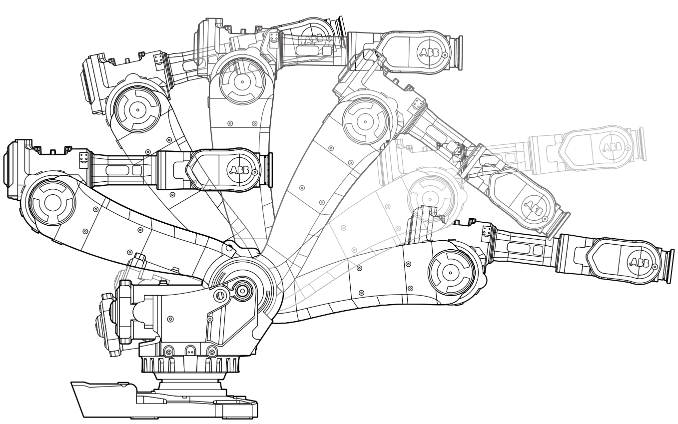
应用
Application

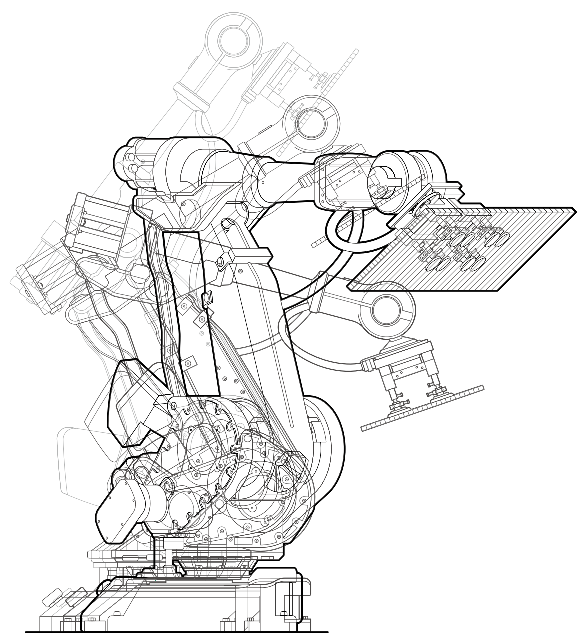
工业机器人

• CNIR601	弧焊工艺应用
• CNIR602	点焊工艺应用
• CNIR603	SafeMove 1 &EPS 应用
• CNIR604	视觉系统
• CNIR605	MultiMove 应用
• CNIR606	SafeMove2 应用
• CNIR607	VWRS 应用
• CNIR608	IDFP 基础应用
• CNIR609	力控应用

Industry Robot

• CNIR601	Arcwelding Application
• CNIR602	Spotwelding Application
• CNIR603	SafeMove 1 & EPS Application
• CNIR604	Integrated Vision
• CNIR605	MultiMove Application
• CNIR606	SafeMove2 Application
• CNIR607	VWRS Application
• CNIR608	IDFP Basic Application
• CNIR609	Force Control





CNIR601 弧焊应用
CNIR601 Arc-welding Application

适用机型
- 使用 ABB 弧焊系统的所有机型

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 操作工

知识要求
- IRC5 基础编程培训
- 弧焊工艺基础知识

完成此课程后，您将可以
- 了解工业机器人和弧焊工艺设备安全系统
- 了解焊接电源、送丝机构和焊枪结构及工作原理
- 掌握 RobotWare Arc 软件指令、数据
- 配置弧焊系统参数
- 学会完整的弧焊工艺编程
- 学会机器人弧焊系统故障分析和处理
- 配置包含 RobotWare Arc 功能的机器人软件系统

培训内容
- 工业机器人和弧焊设备安全知识介绍
- 焊接电源、送丝机构和焊枪硬件结构
- RobotWare Arc 软件指令、数据和系统参数
- 编写弧焊工艺应用程序
- 弧焊工艺分析和故障处理
- 配置机器人弧焊应用系统

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB robots with arc-welding equipment

Target Groups
- Operator
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- IRC5 Basic Programming
- Basic knowledge about arc welding process

After this training , you are able to
- Know the safety system of robot and arc-welding equipment
- Understand the structure and principle of wirefeed unit, power source and torch
- Be familiar with the instruction and data in Robotware Arc
- Configure the parameters in arc-welding system
- Program for arc-welding process
- Diagnose the faults in arc-welding system
- Configure Robotware Arc in Robotstudio

Contents
- Safety and operation guide for arc-welding equipment
- Introduction of power source, wirefeed unit and torch
- Instruction, data and system parameter of RobotWare Arc
- Programming for basic arc-welding process
- Troubleshooting of arc-welding application
- RobotArc system configuration

Information
- Duration: 3 days
- Number of Participants: 4-8 persons

CNIR602 点焊应用
CNIR602 Spot-welding Application

适用机型
- 使用 ABB 点焊系统的所有机器人

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 操作工

知识要求
- IRC5 基础编程培训
- 点焊工艺基础知识

完成此课程后，您将可以
- 了解工业机器人和点焊工艺设备安全系统
- 了解焊接控制器、电缆包和水气单元结构及工作原理
- 掌握 RobotWare Spot 软件指令、数据
- 学会完整的点焊工艺编程
- 学会机器人点焊系统故障分析和处理
- 配置包含 RobotWare Spot 功能的机器人软件系统

培训内容
- 工业机器人和点焊设备安全知识介绍
- 焊接控制器、电缆包和水气单元硬件结构
- RobotWare Spot 软件指令、数据
- 编写点焊工艺应用程序
- 点焊工艺分析和故障处理
- 配置机器人点焊应用软件系统

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB robots with Spot-welding

Target group
- Project/Process engineer
- Electrical maintenance engineer
- Operator

Prerequisites
- Basic programming
- Basic knowledge about spot-welding process

After this training, you are able to
- Know the safety system of robot and spot-welding equipmengt
- Understand the structure and principle of timer,dresspack and water &air unit
- Be familiar with the instruction and data of RobotWare Spot and spot-welding system parameter
- Program for spot-welding system
- Diagnose the fault in spot-welding system
- Configur RobotWare spot with RobotStudio software

Contents
- Safety and operation guide for spot-welding equipmengt
- Inttroduction of the timer,dresspack and water&air unit
- Instruction ,data and system parameter of RobotWare Spot
- Programming for basic spot-welding process
- Troubleshooting for spot-welding application
- RobotSpot system configuration

Information
- Duration: 3 Days
- Number of participants: 4-8 Persons

CNIR603 SafeMove 1 &EPS 应用
CNIR603 SafeMove 1 & EPS Application

适用机型
- 使用 Safemove 1 或 EPS 的 ABB 机器人

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 机械维修工程师
- 操作工

知识要求
- 基础编程培训

完成此课程后，您将可以
- 独立安装 Safemove 和 EPS 板卡
- 独立调试、配置 Safemove 和 EPS 功能

培训内容
- 操作安全
- SafeMove 和 EPS 板卡的安装及连线
- EPS 功能及配置介绍
- SafeMove 功能介绍
- 生成带 SafeMove 选项的机器人系统
- 创建安全用户
- 配置 SafeMove 应用
- SafeMove 相关例程介绍
- SafeMove 配置测试
- 应用实践

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB robot with Safemove 1 or EPS

Target group
- Project/Process engineer
- Electrical maintenance engineer
- Mechanical maintenance engineer
- Operator

Prerequisites
- Basic programming

After this training, you are able to
- Mechanical/Electrical integration of the EPS and SafeMove cards
- Configuration of the EPS and SafeMove cards

Contents
- Occupational health and safety
- Mechanical installation and electrical integration of the EPS/ SafeMove card
- Introduction of EPS function Configuration of EPS
- Introduction of SafeMove function
- Producing a system with the SafeMove option
- Creating a security user
- Configuration of the SafeMove application
- Help routines for supporting SafeMove
- Testing and documentation of the SafeMove configuration Practice

Information
- Duration: 2 Days
- Number of participants: 4-8 Persons

CNIR604 视觉系统
CNIR604 Integrated Vision

适用机型
- 所有集成 ABB 视觉系统的工业机器人

课程对象
- 项目工程师
- 工艺工程师
- 操作工

知识要求
- 机器人基础编程培训

完成此课程后，您将可以
- 了解 ABB 视觉系统配置及技术参数
- 创建集成视觉系统的 ABB 机器人工作站
- 安装调试视觉系统
- 编写集成视觉系统的 RAPID 程序
- 独立处理一些涉及视觉系统的常见故障

培训内容
- ABB 视觉系统应用场景介绍
- ABB 视觉系统主要技术参数及特点
- ABB 视觉系统工作原理介绍
- 连接机器人与照相机
- 创建带视觉系统的机器人工作站
- 照相机调试及校准
- 集成视觉系统的工作站调试，集成视觉系统编程
- 集成视觉系统工作站中的常见故障处理方法

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- The ABB robots with Integrated Vision

Target Groups
- Project Engineer
- Process Engineer
- Operator

Prerequisites
- IRC5 basic programming

After this training, you are able to
- Know the technical data of Integrated Vision
- Create a work station with Integrated Vision
- Install and commission integrated vision independently
- Create a simple RAPID program that acquire an image
- Troubleshoot the common failures in Integrated Vision system

Contents
- Integrated Vision technical data
- The target application
- How does the Integrated Vision work
- Connect camera and robot controller
- Image setup
- Integrated Vision calibration
- Programming
- Troubleshoot some common failures in work station with the Integrated Vision

Information
- Duration: 3 days
- Number of participants: 4-8 persons

CNIR605 MultiMove 应用
CNIR605 MultiMove Application

适用机型
- 使用 MultiMove 的 ABB 机器人

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 项目经理

知识要求
- 基础编程培训
- IRC5 电气原理

完成此课程后，您将可以
- 了解 MultiMove 的功能
- 安装 MultiMove 系统
- 配置协调运动坐标系
- 掌握 MultiMove 的基本指令
- 编写运动程序（独立、同步、协调）
- 执行含有 MultiMove 功能的系统中的程序任务

培训内容
- 操作安全
- MultiMove 系统的硬件构成
- 生成带有 MultiMove 选项的机器人系统
- 工具、对象、坐标系统的测量方法
- 测试同步协调运动功能
- 系统参数及备份
- 机器人在 MultiMove 系统中的运动
- 加载 / 编辑 / 启动 / 保存任务
- 独立运动和同步运动协调运动
- tracks 及其他机械部件的编程
- 应用实践

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB robot with MultiMove

Target Groups
- Project/Process engineer
- Electrical maintenance engineer
- Project manager

Prerequisites
- Basic programming
- IRC5 Electrical Maintenance

After this training, you are able to
- Getting to know the functionality of MultiMove
- Commissioning new MultiMove systems
- Configuring the associated coordinate systems
- The significance and application of MMV instructions
- Writing movement programs (independent, synchronous, coordinated)
- Performing programming tasks on a configured MultiMove application

Contents
- Occupational health and safety
- Structure of the hardware
- Producing a system with the MultiMove option
- Getting to know measurement methods for tool/plant object and basic coordinates
- Testing the functions of'Synchronized and coordinated movements'
- System parameters and backup
- Understanding the movement of the Robot in an MMV system
- Tasks-Loading/Editing/Starting up/Saving
- Independent movements & Synchronized movements
- Synchronized and coordinated movements
- Programming tracks and other machined parts

Information
- Duration: 3 days
- Number of participants: 4-8 persons

CNIR606 SafeMove2 应用
CNIR606 SafeMove2 Application

适用机型
• 使用第二代 Safemove 的 ABB 机器人

课程对象
• 项目 / 工艺工程师
• 电气维修工程师
• 机械维修工程师
• 操作工

知识要求
• 基础编程培训

完成此课程后，您将可以
• 独立更换 SafetyBoard (DSQC1015)
• 配置 Safemove2 功能
• 在 RobotStudio 中仿真 SafeMove, 定义相关参数
• 在界面上查看 Safemove2 相关信息

培训内容
• 操作安全
• 第二代 SafeMove 与第一代 SafeMove 的区别
• SafetyBoard 板卡的安装
• SafeMove Pro 功能介绍
• 生成带 SafeMove2 选项的机器人系统
• 用户系统
• Keyless 模式选择
• 配置 SafeMove2
• RobotStudio 中的仿真 SafeMove 用户界面
• 示教器中的 SafeMove 用户界面
• 应用实践

课程信息
• 培训时间: 2 天
• 学员人数: 4-8 人 / 班

Applicable Robot Type
• All the ABB robot with Safemove2

Target group
• Project/Process engineer
• Electrical maintenance engineer
• Mechanical maintenance engineer
• Operator

Prerequisites
• Basic programming

After this training, you are able to
• Replace the SafetyBoard independently
• Configuration of SafeMove2
• Take advantage of 3Denvironment to define the safemove parameters
• View the information of SafeMove2 on the TPU interface

Contents
• Safety
• Difference between 1st and 2nd generation SafeMove
• Install the SafetyBoard
• SafeMove Pro functions overview
• Producing a system with the SafeMove2 option
• The UAS System
• Keyless mode selector
• Configuration of SafeMove2
• The Visual SafeMove user interface in RobotStudio
• The FlexPendant user interface
• Practice

Information
• Duration: 2 Days
• Number of participants: 4-8 Persons

CNIR607 VWRS 应用
CNIR607 VWRS Application

适用机型
- 使用 VWRS 的 ABB 机器人

课程对象
- 项目 / 工艺工程师
- 设备维护工程师

知识要求
- 基本英语阅读能力
- 已参加 VWRS 编程培训

完成此课程后，您将可以
- 了解焊枪配置过程
- 掌握 VWRS 调试标准
- 掌握点焊相关指令应用
- 掌握修磨相关指令应用
- 掌握涂胶相关指令应用
- 掌握抓手相关指令应用
- 掌握换枪盘相关指令应用

培训内容
- 焊枪配置过程与操作
- VWRS 调试标准
- 点焊相关指令与练习
- 修磨相关指令与练习
- 涂胶设置与练习
- 抓手设置与练习
- 换枪盘设置与练习

课程信息
- 培训时间: 5 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB robot with VWRS

Target group
- Project/Process engineer
- Maintenance engineer

Prerequisites
- Basic English skill
- Have joined VWRS Basis Programming course

After this training, you are able to
- Understand process of Servo Gun Setting
- Get to know the guideline of the Commissioning
- Be familiar with the instruction and data of WPS RZ
- Be familiar with the instruction and data of WPS KF
- Be familiar with the instruction and data of KL
- Be familiar with the instruction and data of G
- Be familiar with the instruction and data of DS

Contents
- Servo gun setup
- Guideline of Debugging in VWRS Standard
- Instruction of Spot Welding and practice
- Instruction of Tip dressing and practice
- Dispensing setup and practice
- Gripper setup and practice
- Tool Changer setup and practice

Information
- Duration: 5 Days
- Number of participants: 4-8 Persons

CNIR608 IDFP 基础应用
CNIR608 IDFP Basic Application

适用机型
• 使用 IDFP 的 ABB 机器人

课程对象
• 项目 / 工艺工程师
• 电气维修工程师
• 现场设备维护

知识要求
• IRC5 基础编程培训
• IRC5 电气原理培训

完成此课程后，您将可以
• 独立安装 IDFP 功能
• 独立调试 IDFP 功能

培训内容
• 操作安全
• IDFP 功能介绍
• IDFP 安装
• 必备基本调测方法
• 用户界面的使用
• Doser 参数
• 应用实践

课程信息

• 培训时间:	3 天
• 学员人数:	3-6 人 / 班

Applicable Robot Type
• ABB robot with IDFP

Target group
• Project/Process engineer
• Electrical maintenance engineer
• Site Person

Prerequisites
• IRC5 Basic programming
• IRC5 Electrical Principle

After this training, you are able to
• Installation of the IDFP
• Configuration of the IDFP

Contents
• Occupational health and safety
• Introduction of IDFP function
• Installation of IDFP
• Basic testing method and step
• How to use IDFP GUI
• Parameters of Doser
• Practice

Information

• Duration:	3 Days
• Number of participants:	3-6 Persons

CNIR609 力控应用
CNIR609 Force Control

适用机型
- ABB 机器人含 Force Control Base (option 661-2) 选项

课程对象
- 项目工程师
- 工艺工程师
- 设备工程师

知识要求
- ABB 机器人基础编程培训

完成此课程后，您将可以
- 了解 ABB 工业机器人基本安全知识
- 能独立安装力控硬件
- 能独立安装力控软件选项
- 能独立完成简单力控编程
- 能运用工具调试力控系统

培训内容
- ABB 机器人安全操作介绍
- 力控系统硬件硬件组成介绍
- 力控应用系统参数配置
- 力控应用基本指令介绍
- 力控应用基本数据介绍
- 力控轨迹编程与调试

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB robot Which have Force Control Base (option 661-2)

Target Groups
- Project engineer
- Process engineer
- Robot maintenance engineer

Prerequisites
- ABB robot basic programming training

After this training, you are able to
- know basic safety knowledge of ABB industry robot
- assemble the Force control parts independently
- install the Force control software option independently
- be able to do programming in Force control system
- use tools to debug the Force control system

Contents
- Safety instruction
- Structure of Force Control system
- Basic configuration of Force Control system
- Basic commands of Force Control system
- Basic data of Force Control system
- Programming and debugging in Force Control system

Information
- Duration: 3 Days
- Number of participants: 4-8 Persons

喷涂机器人
Painting Robot

- CNPR101 IRC5P 机器人操作
- CNPR102 S4P + 机器人操作
- CNPR103 IRC5P 机器人现场安装
- CNPR201 IRC5P 机器人编程
- CNPR202 S4P + 机器人编程
- CNPR301 IRC5P 电气原理 & 故障排除
- CNPR303 S4P + 电气原理 & 故障排除
- CNPR401 IRB 5500 机械维修
- CNPR402 IRB 5400 机械维修
- CNPR403 IRB 580 机械维修
- CNPR404 IRB 540 机械维修
- CNPR501-A IPS(RW5)
- CNPR501-B IPS(RW6)
- CNPR502 RobotStudio 软件（喷涂）
- CNPR601 RobView 5
- CNPR602 RB926 雾化器
- CNPR603 RB951 雾化器
- CNPR604 RB1000 雾化器
- CNPR605 涂装工艺（换色、清洗）

- CNPR101 IRC5P Operation
- CNPR102 S4P + Operation
- CNPR103 IRC5P Installation Instruction of Painting Robot
- CNPR201 IRC5P Programming
- CNPR202 S4P + Programming
- CNPR301 IRC5P Electrical Principle &Troubleshooting
- CNPR303 S4P + Electrical Principle &Troubleshooting
- CNPR401 IRB 5500 Mechanical Maintenance
- CNPR402 IRB 5400 Mechanical Maintenance
- CNPR403 IRB 580 Mechanical Maintenance
- CNPR404 IRB 540 Mechanical Maintenance
- CNPR501-A IPS(RW5)
- CNPR501-B IPS(RW6)
- CNRP502 RobotStudio software (Painting)
- CNPR601 RobView 5
- CNPR602 RB926 Atomizer
- CNPR603 RB951 Atomizer
- CNPR604 RB1000 Atomizer
- CNRP605 Painting process (ColorChange and Cleaning)

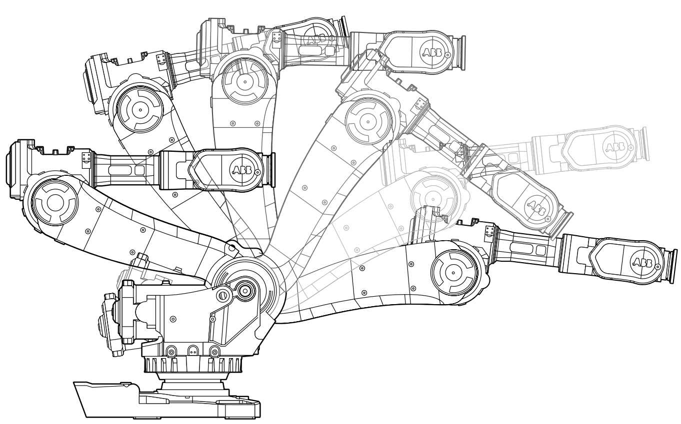
机器人操作
Operation

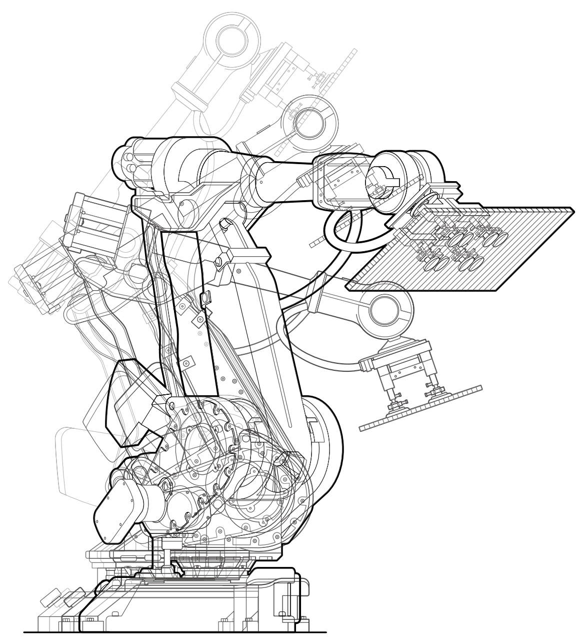
喷涂机器人

• CNPR101	IRC5P 操作
• CNPR102	S4P+ 操作
• CNPR103	IRC5P 机器人现场安装

Painting Robot

• CNPR101	IRC5P Operation
• CNPR102	S4P + Operation
• CNPR103	Installation Instruction of Painting Robot





CNPR101 IRC5P 操作
CNPR101 IRC5P Operation

适用机型
- 使用 IRC5P 控制系统的所有机型

课程对象
- 操作工
- 机械维修工程师
- 电气维修工程师
- 项目 / 工艺工程师

知识要求
- 无

完成此课程后，您将可以
- 了解 ABB 喷涂机器人系统结构
- 熟悉喷涂机器人安全操作规范
- 掌握 ABB 喷涂机器人示教器操作方法
- 能够在手动模式下使用示教器操作机器人，修改程序中的位置点
- 了解 Rapid 程序结构及程序数据类型
- 能够加载，运行 RAPID 程序
- 能够阅读、调试简单应用程序
- 能够做程序备份和系统备份

培训内容
- 系统安全
- 机器人系统架构
- 示教器操作介绍及练习
- RAPID 程序结构及数据类型介绍
- 加载并运行程序
- 基本指令应用及举例说明
- 程序备份及系统备份

课程信息
- 培训时间: 3 天
- 学员人数: 4-10 人 / 班

Applicable Robot Type
- All the ABB robot with IRC5P controller

Target Groups
- Operator
- Mechanical maintenance engineer
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- None

After this training, you are able to
- Understand the structure and principle of ABB painting robot
- Be Familiar with painting robot safety guide
- Master the ABB spraying robot teaching operations
- Operate robot with PTPU, and modify the position in program
- Understand RAPID structure and the type of program data
- Load program and run a RAPID program
- Read, write and debug simple program
- Save program and backup system

Contents
- Safety instruction of painting robot
- Robot structure introduction
- Operation with PTPU
- Structure of RAPID program and Description of data type
- Writing program with basic instructions
- Saving and loading programs
- System backup and Practice

Information
- Duration: 3 days
- Number of participants: 4-10 persons

CNPR102 S4P + 操作
CNPR102 S4P + Operation

适用机型
- 使用 S4P + 控制系统的所有机型

课程对象
- 操作工
- 机械维修工程师
- 电气维修工程师
- 项目 / 工艺工程师

知识要求
- 无

完成此课程后，您将可以
- 了解 ABB 喷涂机器人系统结构
- 熟悉喷涂机器人安全操作规范
- 掌握 ABB 喷涂机器人示教器操作
- 能够在手动模式下使用示教器操作机器人，修改程序中的位置点
- 了解 Rapid 程序结构及程序数据类型
- 能够加载，运行 RAPID 程序
- 能够阅读、调试简单应用程序
- 能够做程序备份和系统备份

培训内容
- 系统安全
- 机器人系统架构
- 示教器操作方法介绍与练习
- RAPID 程序结构及数据类型介绍
- 加载并运行程序
- 基本指令应用及举例说明
- 程序备份及系统备份

课程信息
- 培训时间: 3 天
- 学员人数: 4-10 人 / 班

Applicable Robot Type
- All ABB robot with S4P+ controller

Target Groups
- Operator
- Mechanical maintenance engineer
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- None

After this training, you are able to
- Understand the structure and principle of ABB painting robot
- Be Familiar with painting robot safety guide
- Master the ABB spraying robot teaching operations
- Operation with PTPU
- Operate robot with PTPU, and modify the position in program
- Understand RAPID structure and the type of program data
- Load program and run a RAPID program
- Read, write and debug simple program
- Save program and backup system

Contents
- Safety instruction of painting robot
- Robot structure introduction
- Operation with PTPU and Structure of RAPID program
- Description of data type
- Writing program with basic instructions
- Saving and loading programs
- System backup and Practice

Information
- Duration: 3 days
- Number of participants: 4-10 person

CNPR103 IRC5P 机器人现场安装

CNPR103 Installation Instruction of Painting Robot

适用机型
- ABB 喷涂机器人

课程对象
- 调试工程师
- 设备维护工程师

知识要求
- 电气基础知识
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 喷涂机器人系统基本组成
- 掌握喷涂控制柜及喷涂机器人基本吊装知识
- 掌握喷涂控制柜、机器人和防爆吹扫机械安装知识
- 能够独立完成电气接线
- 能够简单移动机器人
- 能够完成世界坐标的标定

培训内容
- ABB 机器人安全操作介绍
- 喷涂机器人系统介绍
- 控制柜及机器人吊装说明及实践
- 控制柜及机器人安装说明及实践
- 机器人系统相关电气连接讲解
- 手动操作机器人介绍与实践
- 世界坐标系的标定与应用

课程信息
- 培训时间: 1 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB Painting Robot

Target Groups
- Commissioning engineer
- Facility engineer

Prerequisites
- Basic knowledge of electric
- Basic knowledge of mechanics

After this training, you are able to
- Know the basic components of ABB Painting robot system
- Understand the hoisting method of painting robot
- Understand how to install the cabinet, painting robot and purge box on site
- Refer to the manual, finish the electrical installation independently
- Move the robot basically
- Calibrate the World Frame

Contents
- Safety instruction of painting robot
- Painting robot system introduction
- Instruction and practice of cabinet & robot's hoisting
- Instruction and practice of cabinet & robot's Installation
- Instruction and practice of electrical Installation
- Present how to move the robot quickly
- Calibration of world frame

Information
- Duration: 1 days
- Number of participants: 4-8 person

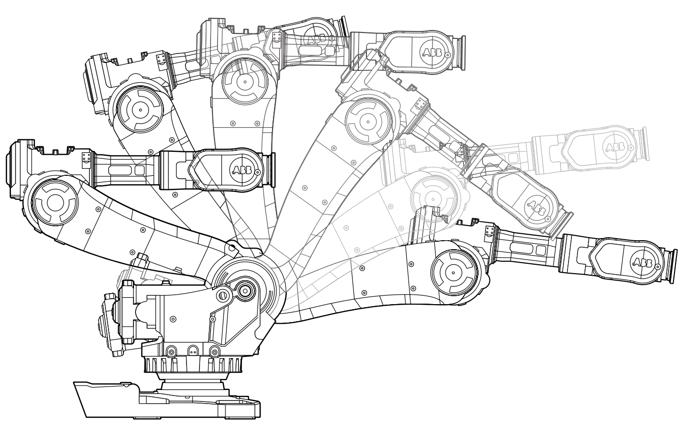
编程
Programming

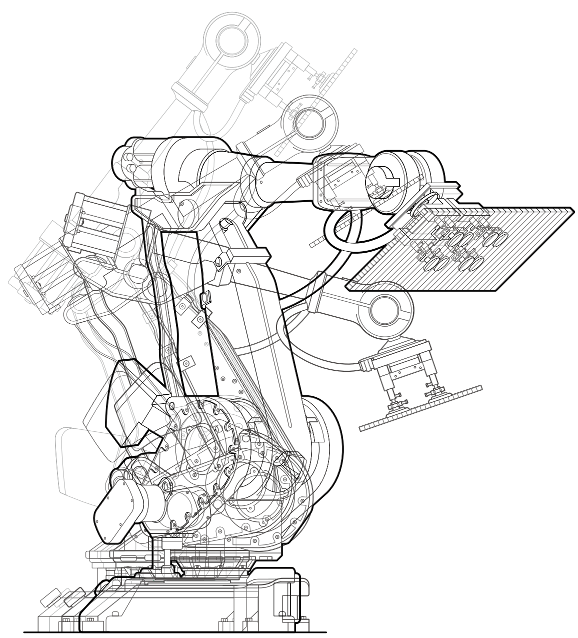
喷涂机器人

- CNPR201 IRC5P 编程
- CNPR202 S4P + 编程

Painting Robot

- CNPR201 IRC5P Programming
- CNPR202 S4P + Programming





CNPR201 IRC5P 编程
CNPR201 IRC5P Programming

适用机型
- 使用 IRC5P 控制系统的所有机型

课程对象
- 操作工
- 电气维修工程师
- 机械维修工程师
- 项目 / 工艺工程师

知识要求
- 基本喷涂工艺知识

完成此课程后，您将可以
- 了解 Rapid 程序结构及程序数据类型
- 能够配置 I/O 信号并运用于编程
- 了解 Brush Table，创建 Brush Table
- 理解并使用换色程序
- 新建轨迹程序
- 配置 INDEX
- 了解 S4P + 与 IRC5P 程序差别

培训内容
- 操作安全
- 喷涂机器人系统架构
- RAPID 程序结构及数据类型
- 基本指令应用及举例说明
- I/O 信号配置
- 输送链跟踪应用介绍
- Brush Table 使用方法
- 换色程序应用介绍
- 创建轨迹方法介绍
- Index 配置方法
- 故障日志解读
- S4P + 与 IRC5P 程序对比
- 操作实践

课程信息
- 培训时间： 5 天
- 学员人数： 4-10 人 / 班

Applicable Robot Type
- All the robots with IRC5P controller

Target Groups
- Operator
- Electrical maintenance engineer
- Mechanical maintenance engineer
- Project/Process engineer

Prerequisites
- Basic knowledge of painting process

After this training , you are able to
- Understand RAPID program structure
- Understand the usage of data type
- Configure I/O signal independently
- Configure and modifying Brush table
- Be familiar with color changing program
- Write simple movement programs
- Configure the INDEX and Be familiar with the difference between S4P + and IRC5P

Contents
- Occupational health and safety with painting robot
- Structure of the painting robot system
- RAPID program structure and data type
- Basic instructions and case study
- I/O signal configuration
- Conveyor tracking
- Introduction of Brush Table
- Program for color changing
- Creating painting path
- Index configuration
- Error code and status report
- Comparison between S4P+ and IRC5P
- Practice

Information
- Duration: 5 Days
- Number of participants: 4-10 Persons

CNPR202 S4P + 编程
CNPR202 S4P + Programming

适用机型
- 使用 S4P + 控制系统的所有机型

课程对象
- 操作工
- 电气维修工程师
- 机械维修工程师
- 项目 / 工艺工程师

知识要求
- 基本喷涂工艺知识

完成此课程后，您将可以
- 了解 Rapid 程序结构及程序数据类型
- 使用喷涂指令编写程序
- 能够配置 I/O 信号并运用编程
- 了解 Brush Table，创建 Brush Table
- 理解并使用换色程序
- 配置 index

培训内容
- 操作安全
- 喷涂机器人系统架构
- RAPID 程序结构及数据类型
- 喷涂指令应用及举例说明
- I/O 信号配置
- 输送链跟踪应用介绍
- Brush Table 使用方法
- 换色程序应用介绍
- Index 配置方法
- 故障日志解读
- 操作实践

课程信息
- 培训时间: 5 天
- 学员人数: 4-10 人 / 班

Applicable Robot Type
- All the robots with S4P + controller

Target Groups
- Operator
- Electrical maintenance engineer
- Mechanical maintenance engineer
- Project/Process engineer

Prerequisites
- Basic knowledge of painting process

After this training , you are able to
- Understand RAPID program structure
- Understand the usage of data type
- Configure I/O signal independently
- Configure and modifying Brush Table
- Be familiar with color changing program
- Write simple movement programs and Configure the INDEX

Contents
- Occupational health and safety with painting robot
- Structure of the painting robot system
- RAPID program structure and data type
- Basic instruction s and case study
- I/O signal configuration
- Conveyor tracking
- Introduction of Brush Table
- Program for color changing
- Index configuration
- Error code and status report
- Practice

Information
- Duration: 5 Days
- Number of participants: 4-10 Persons

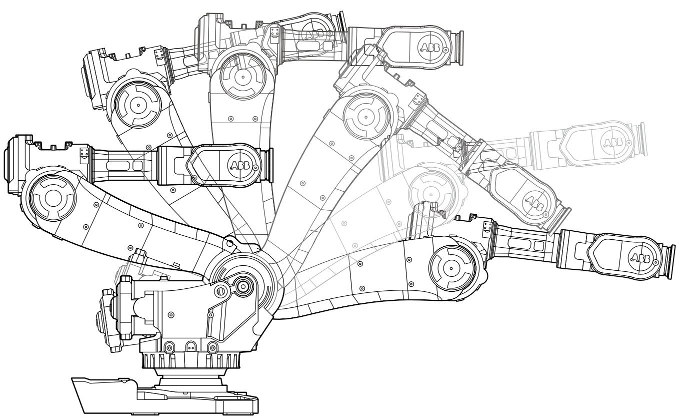
电气原理及故障处理
Electrical Principle and Troubleshooting

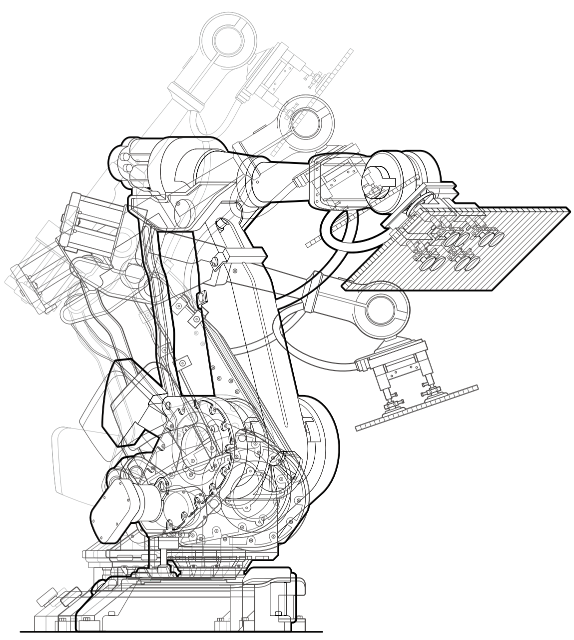
喷涂机器人

- CNPR301 IRC5P 电气原理 & 故障排除
- CNPR303 S4P + 电气原理 & 故障排除

Painting Robot

- CNPR301 IRC5P Electrical Principle &Troubleshooting
- CNPR303 S4P + Electrical Principle &Troubleshooting





CNPR301 IRC5P 电气原理 & 故障排除

CNPR301 IRC5P Electrical Principle &Troubleshooting

适用机型
- 使用 IRC5P 控制系统的所有机型

课程对象
- 电气维修工程师
- 项目 / 工艺工程师

知识要求
- IRC5P 操作培训

完成此课程后，您将可以
- 了解 IRC5P 机器人系统电气结构
- 熟悉 IRC5P 机器人控制柜各电气单元功能及工作原理
- 熟悉 IRC5P 机器人本体各电气单元功能及工作原理
- 了解主要单元在电路及气路图中的连接走向
- 能够独立完成电气设备日常保养维护和备件替换
- 熟悉 IRC5P 机器人控制柜及本体内各单元状态指示灯含义
- 熟悉故障代码的分类含义及快速查找相应的解决方法
- 了解 IRC5P 机器人故障处理的基本思路和常用方法
- 掌握不同启动方式的用法
- 能够独立处理常见故障

课程内容
- 机器人操作安全
- IRC5P 机器人系统
- IRC5P 机器人控制柜中各单元介绍。
- IRC5P 机器人本体中各单元介绍。
- 主要单元电路图讲解
- 主要电气单元维护保养知识
- 主要电气单元拆装实践操作
- IRC5P 机器人控制柜及本体内各单元状态指示灯状态介绍
- IRC5P 机器人故障代码分类介绍
- 机器人部分启动方式对消除故障的作用
- 控制柜及机器人本体主要单元故障介绍及处理方法
- 案例分析和故障排除实践。

课程信息
- 培训时间: 5 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the robots with IRC5P controller

Target Groups
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- IRC5P Operation

After this training , you are able to
- Understand the electrical structure of IRC5P system
- Be familiar with the function of the electrical units in IRC5P cabinet
- Be familiar with the function of the electrical units in manipulator
- Work with circuit diagrams and Implement the basic daily maintenance independently
- Replace the failure part independently
- Work with the circuit diagrams in the manual
- Diagnose the fault, according to LED status and error code
- Develop the executing ability in analysis strategy and basic method
- To grasp the usage of different startup mode
- Troubleshoot the IRC5P robot independently

Contents
- Safety instruction
- Structure and function of painting robot system
- The working function of the electrical units in IRC5P cabinet
- The working function of the electrical units in manipulator
- Circuit diagram explanation and Introduction of daily maintenance of each unit
- Replacement of the failure part
- Description of indicators on the basic electrical unit in IRC5P cabinet and manipulator
- Diagnosis with the error code in IRC5P
- Introduction the usage of restart mode in troubleshooting
- Common faults of each electrical unit in IRC5 robot
- Case study & Practice

Information
- Duration: 5 Days
- Number of participants: 4-8 Persons

CNPR303 S4P + 电气原理 & 故障排除
CNPR303 S4P + Electrical Principle &Troubleshooting

适用机型
- 使用 S4P + 控制系统的所有机型

课程对象
- 电气维修工程师
- 项目 / 工艺工程师

知识要求
- S4P + 操作培训

完成此课程后，您将可以
- 了解 S4P + 机器人系统电气结构
- 熟悉 S4P + 机器人控制柜各电气单元功能及工作原理
- 熟悉 S4P + 机器人本体各电气单元功能及工作原理
- 了解主要单元在电路及气路图中的连接走向
- 能够独立完成电气设备日常保养维护和备件替换
- 熟悉 S4P + 机器人控制柜及本体内各单元状态指示灯含义
- 熟悉故障代码的分类含义及快速查找相应的解决方法
- 了解 S4P + 机器人故障处理的基本思路和常用方法
- 掌握不同启动方式的用法
- 能够独立处理常见故障

课程内容
- 机器人操作安全
- S4P + 机器人系统
- S4P + 机器人控制柜中各单元介绍
- S4P + 机器人本体中各单元介绍
- 主要单元电路图讲解
- 主要电气单元维护保养知识
- 主要电气单元拆装实践操作
- S4P + 机器人控制柜及本体内各单元状态指示灯状态介绍
- S4P + 机器人故障代码分类介绍
- 机器人部分启动方式对消除故障的作用
- 控制柜及机器人本体主要单元故障介绍及处理方法
- 案例分析和故障排除实践。

课程信息

• 培训时间:	5 天
• 学员人数:	4-8 人 / 班

Applicable Robot Type
- All the robots with S4P + controller

Target Groups
- Electrical maintenance engineer
- Project/Process engineer

Prerequisites
- S4P + Operation

After this training , you are able to
- Understand the electrical structure of S4P+system
- Be familiar with the function of the electrical units in S4P+cabinet
- Be familiar with the function of the electrical units in manipulator
- Work with circuit diagrams and Implement the basic daily maintenance independently
- Replace the failure part independently
- Work with the circuit diagrams in the manual
- Diagnose the fault, according to LED status and error code
- Develop the executing ability in analysis strategy and basic method
- To grasp the usage of different startup mode
- Troubleshoot the S4P+robot independently

Contents
- Safety instruction
- Structure and function of painting robot system
- The working function of the electrical units in S4P+cabinet
- The working function of the electrical units in manipulator
- Circuit diagram explanation and Introduction of daily maintenance of each unit
- Replacement of the failure part
- Description of indicators on the basic electrical unit in S4P + cabinet and manipulator
- Diagnosis with the error code in S4P +
- Introduction the usage of restart mode in troubleshooting
- Common faults of each electrical unit in IRC5 robot
- Case study & Practice

Information

• Duration:	5 Days
• Number of participants:	4-8 Persons

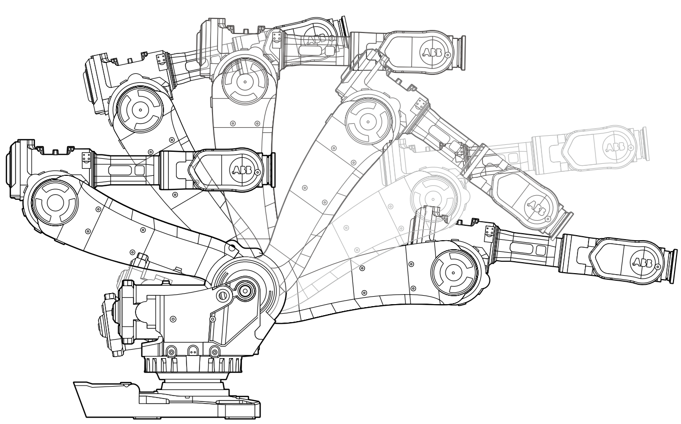
机械维修
Mechanical Maintenance

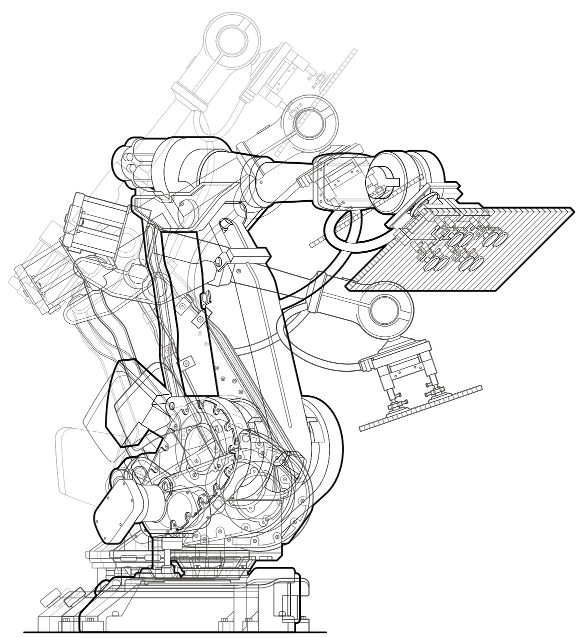
喷涂机器人

- CNPR401 IRB 5500 机械维修
- CNPR402 IRB 5400 机械维修
- CNPR403 IRB 580 机械维修
- CNPR404 IRB 540 机械维修

Painting Robot

- CNPR401 IRB 5500 Mechanical Maintenance
- CNPR402 IRB 5400 Mechanical Maintenance
- CNPR403 IRB 580 Mechanical Maintenance
- CNPR404 IRB 540 Mechanical Maintenance





CNPR401 IRB 5500 机械维修
CNPR401 IRB 5500 Mechanical Maintenance

适用机型
- ABB IRB 5500 喷涂机器人

课程对象
- 机械维修工程师

知识要求
- 喷涂机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 参照手册，独立更换各轴电机、电缆
- 参照手册，独立更换机器人手腕、齿轮箱
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人 IRB5500 本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人手腕、齿轮箱更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间: 5 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB 5500

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Painting robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB painting robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the gearboxes and wrist independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of wrist and gearboxes
- Replacement of gearboxes Oil and Fine calibration
- Practice

Information
- Duration: 5 days
- Number of participants: 4-8 persons

CNPR402 IRB 5400 机械维修
CNPR402 IRB 5400 Mechanical Maintenance

适用机型
- ABB IRB 5400 喷涂机器人

课程对象
- 机械维修工程师

知识要求
- 喷涂机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 ABB 工业机器人基本构造
- 掌握机器人本体常用维护保养知识
- 能够独立更换各轴电机、电缆
- 能够独立更换机器人手腕、齿轮箱及平衡装置
- 能够借助仪器对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- ABB 机器人 IRB5400 机器人本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人手腕、齿轮箱、平衡装置更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间: 5 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB IRB 5400

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Painting robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of ABB painting robot
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the wrist gearboxes and balancing system independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of the ABB manipulator
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of wrist and gearboxes
- Replacement of balancing system
- Replacement of gearboxes Oil and Fine calibration
- Practice

Information
- Duration: 5 days
- Number of participants: 4-8 persons

CNPR403 IRB 580 机械维修
CNPR403 IRB 580 Mechanical Maintenance

适用机型
- ABB IRB 580 喷涂机器人

课程对象
- 机械维修工程师

知识要求
- 喷涂机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 IRB 580 喷涂机器人基本构造
- 掌握机器人本体常用维护保养知识
- 能够独立更换各轴电机、电缆
- 能够独立更换机器人手腕、手臂、齿轮箱及平衡装置
- 能够借助校准设备对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- IRB 580 本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人手腕、手臂、齿轮箱、平衡装置更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间: 5 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB Painting Robot: IRB 580

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Painting robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of IRB 580
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the arms, wrist and gearboxes independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of IRB 580
- Mechanical maintenance knowledge
- Replacement of motors and cables
- Replacement of wrist, arms and gearboxes
- Replacement of gearboxes Oil and Fine calibration
- Practice

Information
- Duration: 5 days
- Number of participants: 4-8 persons

CNPR404 IRB 540 机械维修
CNPR404 IRB 540 Mechanical Maintenance

适用机型
- ABB IRB 540 喷涂机器人

课程对象
- 机械维修工程师

知识要求
- 喷涂机器人操作培训
- 机械基础知识

完成此课程后，您将可以
- 了解 IRB 540 喷涂机器人基本构造
- 掌握机器人本体常用维护保养知识
- 能够独立更换各轴电机、电缆
- 能够独立更换机器人手腕、手臂、齿轮箱及平衡装置
- 能够借助校准设备对机器人做精校准

培训内容
- ABB 机器人安全操作介绍
- IRB 540 本体硬件结构介绍
- 日常机械维护保养知识介绍及实践
- 各轴电机、电缆更换步骤讲解及实践
- 机器人手腕、手臂、齿轮箱、平衡装置更换方法讲解与实践
- 机器人精校准方法介绍与实践
- 机器人各轴齿轮箱润滑油的更换步骤及实践

课程信息
- 培训时间: 5 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- ABB Painting Robot: IRB 540

Target Groups
- Mechanical maintenance engineer

Prerequisites
- Painting robot operation training
- Basic knowledge about robotics mechanics

After this training, you are able to
- Know the structure of IRB 540
- Understand the maintenance method of manipulator
- Refer to the manual, replace the motors and cables independently
- Refer to the manual, replace the arms, wrist and gearboxes independently
- Calibrate the robot after any replacement of mechanical unit

Contents
- Safety instruction
- Structure of IRB 540
- Mechanical maintenance knowledge
- Replacement of motors and cables, Replacement of wrist, arms and gearboxes
- Replacement of gearboxes Oil
- Fine calibration
- Practice

Information
- Duration: 5 days
- Number of participants: 4-8 persons

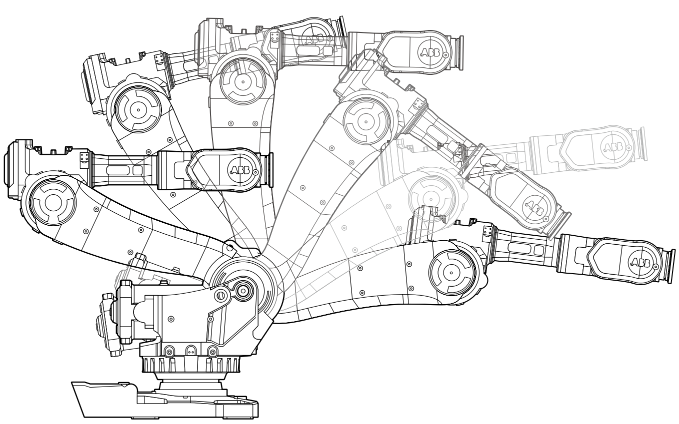
软件
Software

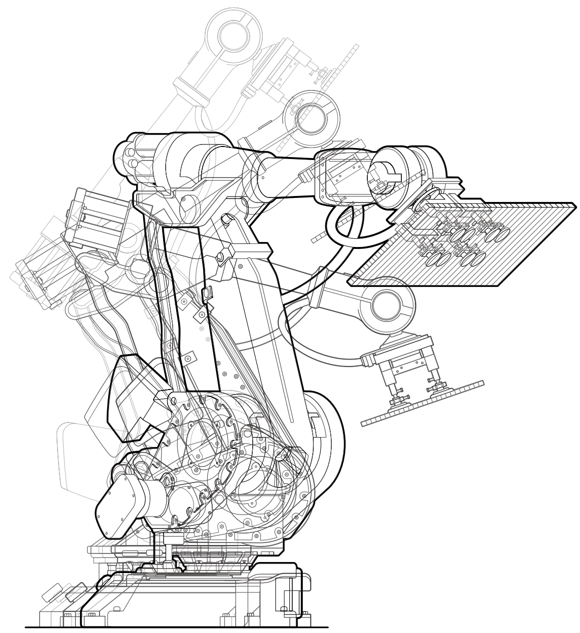
喷涂机器人

- CNPR501-A IPS(RW5)
- CNPR501-B IPS(RW6)
- CNPR502 RobotStudio 软件（喷涂）

Painting Robot

- CNPR501-A IPS(RW5)
- CNPR501-B IPS(RW6)
- CNRP502 RobotStudio software (Painting)





CNPR501-A IPS(RW5)
CNPR501-A IPS(RW5)

适用机型
- 所有使用 IPS 的 ABB 喷涂机器人

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 操作工

知识要求
- 喷涂机器人操作培训
- 喷涂机器人编程培训
- 喷涂工艺基础知识

完成此课程后，您将可以
- 了解 IPS 系统架构
- 掌握 IPS 的备份与还原方法
- 熟悉 IPS 配置
- 掌握 IPS 版本更新方法
- 了解 IPS 系统诊断（查告警）与调试方法
- 熟悉 IPS 与 EIO 的关系
- 校正常用信号

培训内容
- IPS 系统架构介绍
- IPS 备份与还原的方法
- IPS（2KP）常用参数介绍及配置
- IPS 版本更新方法介绍
- IPS 报警信息查询
- IPS 与 EIO 的关系介绍
- 常用信号校正方法（Fluid，Atom，Shape）

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB painting robots with IPS

Target Groups
- Project/process engineer
- Electrical maintenance engineer
- Operator

Prerequisites
- Painting robot operation training
- Painting robot programming training
- Basic knowledge about painting process

After this training, you are able to
- Know the structure of IPS
- Backup and restore the IPS
- Be familiar with IPS configuration
- Handle IPS version update
- Troubleshoot the IPS via error code and Debug the IPS
- Be familiar with the mapping between EIO and IPS
- Adjust the common signal in IPS

Contents
- IPS structure description
- The method of IPS backup and restore
- Common configuration of IPS(2KP)
- IPS version update
- IPS error code
- EIO mapping in IPS
- IPS common signal turning, such as Fluid, Atom, Shape

Information
- Duration: 3 Days
- Number of participants: 4-8 Persons

CNPR501-B IPS(RW6)
CNPR501-B IPS(RW6)

适用机型
- 所有使用 IPS 的 ABB 喷涂机器人

课程对象
- 项目 / 工艺工程师
- 设备维护工程师

知识要求
- 喷涂机器人操作培训
- 喷涂机器人编程培训
- 喷涂工艺基础知识

完成此课程后，您将可以
- 了解 IPS RW6.0 系统架构
- 掌握 IPS 的备份与还原
- 熟悉 IPS 配置
- 掌握 IPS 版本更新方法
- 了解 IPS 系统诊断与调试方法
- 了解参数校准

培训内容
- IPS RW6.0 系统架构介绍
- IPS 备份与还原
- IPS 常用参数介绍及配置
- IPS 升降级方法介绍
- IPS 报警信息查询
- IPS RW6.0 与之前版本的差别
- 参数校准方法

课程信息
- 培训时间: 3 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB painting robots with IPS

Target group
- Project/Process engineer
- Maintenance engineer

Prerequisites
- Painting robot operation training
- Painting robot programming training
- Basic knowledge about painting process

After this training, you are able to
- Know the structure of IPS
- Backup and restore the IPS
- Be familiar with IPS configuration
- Handle IPS version update
- Troubleshoot the IPS via error code and Debug the IPS
- Adjust the common signal in IPS

Contents
- IPS RW6.0 structure
- IPS backup and restore
- Common configuration of IPS
- IPS upgrade and downgrade
- IPS error code
- New function in IPS RW6.0
- Calibration of Fluid, Atom, Shape

Information
- Duration: 3 Days
- Number of participants: 4-8 Persons

CNPR502 RobotStudio 软件（喷涂）
CNRP502 RobotStudio software (Painting)

适用机型
- 所有 ABB 喷涂机器人

课程对象
- 项目 / 工艺工程师

知识要求
- IRC5P 基础编程培训

完成此课程后，您将可以
- 使用 Robotstudio 进行产品布局
- 根据实际需要创建工作站
- 创建和布置工作站的组件（例如工具，坐标系，几何体）
- 使用 RobtStudio 进行离线编程并仿真
- 创建外轴
- 制作机器人工作视频
- 创建多台机器人工作站

培训内容
- 创建工作站
- 创建系统
- 创建几何体和机械装置
- 创建工具、工件坐标系、路径点、轨迹
- 创建外轴
- 利用创建的组件和数据进行离线编程和仿真
- ABB 机器人的可选项使用，包括外轴，输送链跟踪
- 学习制作自定义视频录像

课程信息
- 培训时间: 5 天
- 学员人数: 6-10 人 / 班

Applicable Robot Type
- All the ABB Painting robot

Target group
- Project/Process engineer

Prerequisites
- IRC5P Basic programming

After this training, you are able to
- Layout product in RobotStudio
- Build a station according to requirement
- Create the components in the station(such as Tools, Coordinates, Geometries)
- Program offline
- Creating external axis
- Make a video of the running station
- Build station with more than one robot

Contents
- Creating a station
- Creating a system
- Creating the geometries and mechanical unit
- Creating Tool, WorkObject, Targets and Paths
- Creating external axis
- Programming offline and simulation
- Program with ABB additional option, such as external axis, conveyor tracking
- Making a video

Information
- Duration: 5 Days
- Number of participants: 6-10 Persons

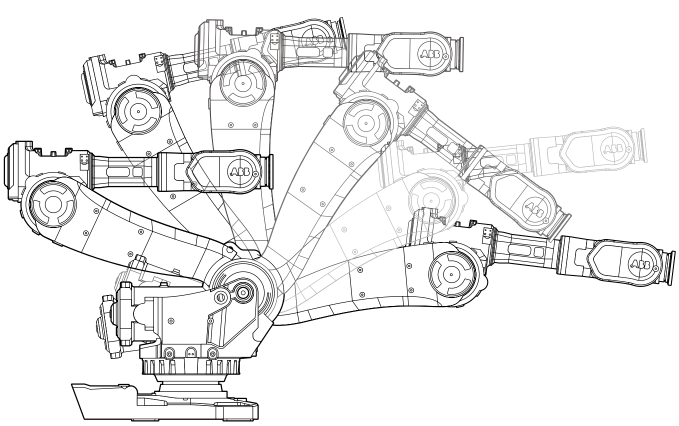
应用
Application

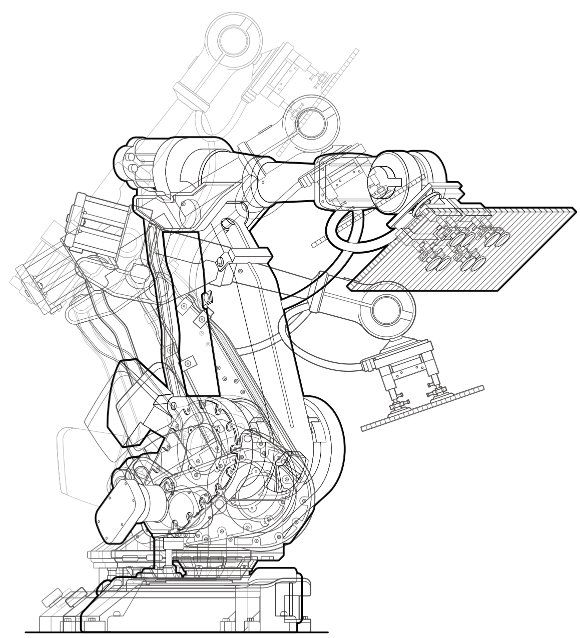
喷涂机器人

• CNPR601	RobView 5
• CNPR602	RB926 雾化器
• CNPR603	RB951 雾化器
• CNPR604	RB1000 雾化器
• CNPR605	涂装工艺（换色、清洗）

Painting Robot

• CNPR601	RobView 5
• CNPR602	RB926 Atomizer
• CNRP603	RB951 Atomizer
• CNRP604	RB1000 Atomizer
• CNRP605	Painting process (ColorChange and Cleaning)





CNPR601 RobView 5
CNPR601 RobView 5

适用机型
- 使用 ABB 的喷涂机器人

课程对象
- 项目 / 工艺工程师

知识要求
- 喷涂机器人操作培训
- 喷涂机器人编程培训
- 喷涂工艺基础知识

完成此课程后，您将可以
- 灵活管理机器人文件
- 维护管理任务流程
- 实现在线诊断
- IO 在线监控
- 监视与编辑 IPS 参数
- 新建和修改刷子表单
- 新建和修改换色、清洗流程
- 建立和定制用户监控与操作界面

培训内容
- 安装软件与授权激活
- UAS 配置
- File Manager 运用
- Job Queue 管理
- 在线数据诊断与监控
- IPS 监视与编辑
- 刷子表单编辑
- 换色清洗流程编辑
- 监控与操作界面生成

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB robot with IRC5P controller

Target group
- Project/Process engineer

Prerequisites
- Painting robot operation training
- Painting robot programming training
- Basic knowledge about painting process

After this training, you are able to
- Manage robot file easily
- Maintain job queue
- Diagnose the data on line
- Monitor the I/O signals on line
- Monitor and edit IPS parameter
- Generate and modify bush table
- Generate and modify color changing and cleaning sequences
- Build and customize user screen for monitoring and operation

Contents
- Software installation and key activation
- User authentication system configuration
- File Manager
- Job Queue Maintenance
- On-line diagnostics and monitoring
- IPS monitoring and configuration
- Bush table editing
- Color changing and cleaning sequences modification
- User screen building

Information
- Duration: 2 Days
- Number of participants: 4-8 Persons

CNPR602 RB926 雾化器
CNRP602 RB926 Atomizer

适用机型
- 使用 926 雾化器的喷涂机器人

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 操作工

知识要求
- 喷涂机器人操作培训
- 喷涂机器人编程培训
- 喷涂工艺基础知识

完成此课程后，您将可以
- 了解雾化器安全须知
- 掌握 926 雾化器的构造细节及工作原理
- 掌握 926 雾化器的使用注意要点
- 掌握常用雾化器的保养与维护
- 通过调整参数，达到工艺要求

培训内容
- 操作安全
- 926 雾化器的构造细节及工作原理
- 926 雾化器的使用注意要点
- 926 雾化器的保养与维护
- 雾化器参数调整
- 案例分析

课程信息
- 培训时间：2 天
- 学员人数：4-8 人 / 班

Applicable Robot Type
- All the ABB painting robots with Atomizer(926)

Target Groups
- Project/process engineer
- Electrical maintenance engineer
- Operator

Prerequisites
- Painting robot operation training
- Painting robot programming training
- Basic knowledge about painting process

After this training, you are able to
- Know the safety precaution of atomizer
- Understand the structure and principle of 926
- Understand the key points in 926 application
- Implement the routine maintenance of atomizer
- Modify the parameters to reach the process requirement

Contents
- Safety instruction
- The structure and principle of 926
- Notice in 926 application
- Routine maintenance of 926
- Parameter modification
- Case study

Information
- Duration: 2 Days
- Number of participants: 4-8 Persons

CNPR603 RB951 雾化器
CNRP603 RB951 Atomizer

适用机型
- 使用 951 雾化器的喷涂机器人

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 操作工

知识要求
- 喷涂机器人操作培训
- 喷涂机器人编程培训
- 喷涂工艺基础知识

完成此课程后，您将可以
- 了解雾化器安全须知
- 掌握 951 雾化器的构造细节及工作原理
- 掌握 951 雾化器的使用注意要点
- 掌握常用雾化器的保养与维护
- 通过调整参数，达到工艺要求

培训内容
- 雾化器发展历史
- 常用雾化器构造
- 951 雾化器的构造细节及工作原理
- 951 雾化器的使用注意要点
- 951 雾化器的保养与维护
- 雾化器参数调整
- 案例分析

课程信息
- 培训时间： 2 天
- 学员人数： 4-8 人 / 班

Applicable Robot Type
- All the ABB painting robots with Atomizer(951)

Target Groups
- Project/process engineer
- Electrical maintenance engineer
- Operator

Prerequisites
- Painting robot operation training
- Painting robot programming training
- Basic knowledge about painting process

After this training, you are able to
- Know the safety precaution of atomizer
- Understand the structure and principle of 951
- Understand the key points in 951 application
- Implement the routine maintenance of atomizer
- Modify the parameters to reach the process requirement

Contents
- Atomizer development history
- Safety instruction
- The structure and principle of 951
- Notice in 951 application
- Routine maintenance of 951
- Parameter modification
- Case study

Information
- Duration: 2 Days
- Number of participants: 4-8 Persons

CNPR604 RB1000 雾化器
CNRP604 RB1000 Atomizer

适用机型
- 使用 RB1000 雾化器的喷涂机器人

课程对象
- 项目 / 工艺工程师
- 电气维修工程师
- 操作工

知识要求
- 喷涂机器人操作培训
- 喷涂机器人编程培训
- 喷涂工艺基础知识

完成此课程后，您将可以
- 了解雾化器安全须知
- 掌握 RB1000 雾化器的构造细节及工作原理（外加电、内加电）
- 掌握 RB1000 雾化器的使用注意要点
- 掌握常用雾化器的保养与维护
- 通过调整参数，达到工艺要求

培训内容
- 操作安全
- RB1000 雾化器的构造细节及工作原理
- RB1000 雾化器的使用注意要点
- RB1000 雾化器的保养与维护
- 雾化器参数调整
- 案例分析

课程信息
- 培训时间: 2 天
- 学员人数: 4-8 人 / 班

Applicable Robot Type
- All the ABB painting robots with Atomizer(RB1000)

Target Groups
- Project/process engineer
- Electrical maintenance engineer
- Operator

Prerequisites
- Painting robot operation training
- Painting robot programming training
- Basic knowledge about painting process

After this training, you are able to
- Know the safety precaution of atomizer
- Understand the structure and principle of RB1000
- Understand the key points in RB1000 application
- Implement the routine maintenance of atomizer
- Modify the parameters to reach the process requirement

Contents
- Safety instruction
- The structure and principle of RB1000
- Notice in RB1000 application
- Routine maintenance of RB1000
- Parameter modification
- Case study

Information
- Duration: 2 Days
- Number of participants: 4-8 Persons

CNPR605 涂装工艺（换色、清洗）
CNRP605 Painting process (ColorChange and Cleaning)

适用机型
- 所有 ABB 喷涂机器人

课程对象
- 工艺工程师
- 维修工程师
- 操作工

知识要求
- 喷涂工艺基本知识

完成此课程后，您将可以
- 掌握换色阀的构造细节及工作原理
- 掌握换色阀使用的注意要点
- 理解换色程序
- 理解清洗程序
- 换色操作
- 清洗操作

培训内容
- 换色阀的构造细节及工作原理
- 换色阀使用的注意要点
- 换色程序及过程
- 清洗程序及过程
- 换色操作
- 清洗操作

课程信息
- 培训时间: 2 天
- 学员人数: 4-10 人 / 班

Applicable Robot Type
- All the ABB Painting robot

Target group
- Process engineer
- Maintenance engineer
- Operator

Prerequisites
- Basic knowledge about painting process

After this training, you are able to
- Understand the structure of ColorChanger
- Understand the attentions of ColorChanger
- Understand the ColorChange program
- Understand the cleaning program
- ColorChange operation
- Cleaning operation

Contents
- The structure of ColorChanger
- The attention of ColorChanger
- The ColorChange program and process
- The cleaning program and process
- ColorChange operation
- Cleaning operation

Information
- Duration: 2 Days
- Number of participants: 4-10 Persons

ABB 校企合作
ABB University-Enterprise Cooperation

机器人技术及应用

• CNED101	高校学生初级培训课程
• CNED102	高校学生中级培训课程
• CNED201	高校讲师初级培训课程
• CNED202	高校讲师中级培训课程
• CNED301	机器人通用技能社教联合班培训课程
• CNED302	机器人高阶技能社教联合班培训课程

Robotics Technology and Application

• CNED101	College student' Basic Skill Course
• CNED102	College student'Intermediate Skill Course
• CNED201	College Instructor'Basic Skill Course
• CNED202	College Instructor'Intermediate Skill Course
• CNED301	ABB Robotics General Skill Course
• CNED302	ABB Robotics Higher Skill Course

CNED101 高校学生初级培训课程
CNED101 College student’ Basic Skill Course

适用机型
• 使用 IRC5 控制系统的所有机器人

完成此课程后，您将可以
• 了解 ABB 工业机器人工作原理及系统架构
• 熟悉工业机器人安全操作规范
• 了解机器人工作中涉及到的各种坐标
• 能够在手动模式下使用示教器操作机器人
• 了解 RAPID 语言结构，并能调试简单例程
• 能够修改程序中的位置点
• 在自动模式下加载并运行 RAPID 程序
• 能够保存程序
• 备份系统
• 了解机器人控制柜及本体的安装
• 了解 IRC5 机器人各电气单元
• 了解机器人本体结构

培训内容
• 机器人操作安全
• ABB 工业机器人系统介绍
• 手动模式下的机器人操作
• 工业机器人坐标系统
• RAPID 编程语言
• 基本指令
• 程序保存
• 系统备份
• 操作实践

课程信息

• 培训时间：	4 天
• 学员人数：	每台机器人 8-10 人

Applicable Robot Type
• All the ABB robots with IRC5 controller

Completed this course, you may able to
• Understand ABB industrial robots structure and principle
• Familiar with ABB robots operation and safety
• Understand coordinate systems
• Operate robot with TPU in manual mode
• Understand RAPID structure, debug the simple program
• Be able to modify target position
• Be able to Load program and debug Rapid in auto mode
• Be able to save program
• Backup controller system
• Understand installation of controller and manipulator
• Understand function of each electronic module
• Understand structure of manipulator

Contents
• Safety instruction
• ABB industry robot introduction
• Operating the robot in manual mode
• Robot coordinate systems
• RAPID structure
• Common instructions
• Program save as
• System backup
• Hands-on job

Information

• Duration：	4 days
• Number of participants：	8-10 persons per robot

CNED102 高校学生中级培训课程
CNED102 College student’ Intermediate Skill Course

适用机型
- 使用 IRC5 控制系统的所有机器人

完成此课程后，您将可以
- 定义、修改机器人 I/O 信号
- 使用 RAPID 手册帮助编程
- 了解安全区域设置 ,WorldZone
- 掌握常用的中断处理指令
- 掌握常用的错误处理指令
- 了解 IRC5 机器人电气原理
- 了解机器人本体机械保养知识
- RobotStudio 简单应用
- 了解某类应用的常规用法 （例如搬运、集成视觉 ……）

培训内容
- RAPID 程序结构
- TRAP 类型的例行程序
- 中断处理
- 错误处理
- WorldZone 功能介绍
- IRC5 电气原理简介
- 机器人本体机械保养
- RobotStudio 简介
- 相关应用案例分析
- 操作实践

课程信息
- 培训时间: 5 天
- 学员人数: 每台机器人 8-10 人

Applicable Robot Type
- All the ABB robots with IRC5 controller

Completed this course, you may able to
- Be able to define or modify IO signals
- Be able to complete program with help of Rapid manual
- Understand safety working area by WorldZone setting
- Dealing with Interrupt routine
- Dealing with error handler routine
- Understand robotics electronic principle
- Understand manipulator maintenance
- Play with RobotStudio
- Understand the usual method of an application (Material Handing, Integrated Vision)

Contents
- RAPID program structure
- Routine type
- Interrupt routine
- Error handler
- WorldZone function
- Electrical principle
- Manipulator maintenance
- RobotStudio introduction
- Case study
- Hands-on Job

Information
- Duration: 5 days
- Number of participants: 8-10 persons per robot

CNED201 高校讲师初级培训课程
CNED201 College Instructor’Basic Skill Course

适用机型
• 使用 IRC5 控制系统的所有机器人

完成此课程后，您将可以
• 了解 ABB 工业机器人工作原理及系统架构
• 熟悉工业机器人安全操作规范
• 了解机器人工作中涉及到的各种坐标
• 能够在手动模式下使用示教器操作机器人
• 能够修改程序中的位置点
• 在自动模式下加载并运行 RAPID 程序
• 能够保存程序
• 备份系统
• 了解机器人控制柜及本体的安装
• 了解 IRC5 机器人各电气单元
• 了解机器人本体结构
• 了解常见 IO 通讯方式
• 机器人安装系统

培训内容
• 机器人操作安全
• ABB 工业机器人系统介绍
• 手动模式下的机器人操作
• 工业机器人坐标系统
• RAPID 编程语言
• 基本指令
• 程序保存
• 系统备份
• 操作实践
• IO 通讯介绍
• 安装机器人系统

课程信息
• 培训时间: 5 天
• 学员人数: 每台机器人 8-10 人

Applicable Robot Type
• All the ABB robots with IRC5 controller

Completed this course, you may able to
• Understand ABB industrial robots structure and principle
• Familiar with ABB robots operation and safety
• Understand coordinate systems
• Operate robot with TPU in manual mode
• Be able to modify target position
• Be able to Load program and debug Rapid in auto mode
• Be able to save program
• Backup controller system
• Understand installation of controller and manipulator
• Understand function of each electronic module
• Understand structure of manipulator
• Understand common IO communication
• Install controller system on-line

Contents
• Safety instruction
• ABB industry robot introduction
• Operating the robot in manual mode
• Robot coordinate systems
• RAPID structure
• Common instructions
• Program save as
• System backup
• Hands-on job
• IO Communication introduction
• install robot system on-line

Information
• Duration: 5 days
• Number of participants: 8-10 persons per robot

CNED202 高校讲师中级培训课程

CNED202 College Instructor’ Intermediate Skill Course

适用机型
• 使用 IRC5 控制系统的所有机器人

完成此课程后，您将可以
• 定义、修改机器人 I/O 信号
• 使用 RAPID 手册帮助编程
• 了解安全区域设置 ,WorldZone
• 中断处理指令
• 错误处理指令
• 了解 IRC5 机器人电气原理
• 了解机器人本体机械保养知识
• RobotStudio 简介
• 了解数据属性介绍
• 编辑带参数的例行程序
• 了解常用系统参数
• 掌握某类应用的常规用法 （例如搬运、集成视觉 ......）

培训内容
• RAPID 程序结构
• TRAP 类型的例行程序
• 中断处理
• 错误处理
• WorldZone 功能介绍
• IRC5 电气原理简介
• 机器人本体机械保养
• RobotStudio 简介
• 相关案例分析
• 操作实践
• 数据属性介绍
• 带参数的例行程序
• 系统参数介绍
• 应用案例

课程信息

• 培训时间:	5 天
• 学员人数:	每台机器人 8-10 人

Applicable Robot Type
• All the ABB robots with IRC5 controller

Completed this course, you may able to
• Be able to define or modify IO signals
• Be able to complete program with help of Rapid manual
• Understand safety working area by WorldZone setting
• Dealing with Interrupt routine
• Dealing with error handler routine
• Understand robotics electronic principle
• Understand manipulator maintenance
• Play with RobotStudio
• Understand data type
• Edit routine with parameter
• Understand system parameter
• Understand the usual method of an application
(Material Handing, Integrated Vision)

Contents
• RAPID program structure
• Routine type
• Interrupt routine
• Error handler
• WorldZone function
• RobotStudio introduction
• Case study
• Hands-on Job
• Data type introduction
• Routine with paratmeter
• System parameter introduction
• Case study

Information

• Duration:	5 days
• Number of participants:	8-10 persons per robot

CNED301 机器人通用技能社教联合班培训课程
CNED301 ABB Robotics General Skill Course

适用机型
• 使用 IRC5 控制系统的所有机器人

完成此课程后，您将可以
• 了解 ABB 工业机器人工作原理及系统架构
• 熟悉工业机器人安全操作规范
• 了解机器人工作中涉及到的各种坐标
• 能够在手动模式下使用示教器操作机器人
• 能够修改程序中的位置点
• 在自动模式下加载并运行 RAPID 程序
• 能够保存程序
• 备份系统
• 能够更新机器人零位

培训内容
• 机器人操作安全
• ABB 工业机器人系统介绍
• 手动模式下的机器人操作
• 工业机器人坐标系统
• RAPID 编程语言
• 基本指令
• 程序保存
• 系统备份
• 机器人零位更新方法介绍
• 操作实践

课程信息

• 培训时间:	3 天
• 学员人数:	每台机器人 8-10 人

Applicable Robot Type
• All the ABB robots with IRC5 controller

Completed this course, you may able to
• Understand ABB industrial robots structure and principle
• Familiar with ABB robots operation and safety
• Understand coordinate systems
• Operate robot with TPU in manual mode
• Be able to modify target position
• Be able to Load program and debug Rapid in auto mode
• Be able to save program
• Backup controller system
• Update revolution counter

Contents
• Safety instruction
• ABB industry robot introduction
• Operating the robot in manual mode
• Robot coordinate systems
• RAPID structure
• Common instructions
• Program save as
• System backup
• Introduction of robot calibration
• Hands-on job

Information

• Duration:	3 days
• Number of participants:	8-10 persons per robot

CNED302 机器人高阶技能社教联合班培训课程
CNED302 ABB Robotics Higher Skill Course

适用机型
- 使用 IRC5 控制系统的所有机器人

完成此课程后，您将可以
- 了解机器人 I/O 信号
- 使用 RAPID 手册帮助编程
- 了解安全区域设置 ,WorldZone
- 了解中断处理指令
- 了解错误处理指令
- 了解 IRC5 机器人电气原理
- 了解机器人本体机械保养知识
- RobotStudio 简单应用
- 了解某类应用的常规用法 （例如搬运、集成视觉 ......）

培训内容
- RAPID 程序结构
- TRAP 类型的例行程序
- 中断处理
- 错误处理
- WorldZone 功能介绍
- IRC5 电气原理简介
- 机器人本体机械保养
- RobotStudio 简介
- 相关应用案例分析
- 操作实践

课程信息

• 培训时间:	5 天
• 学员人数:	每台机器人 8-10 人

Applicable Robot Type
- All the ABB robots with IRC5 controller

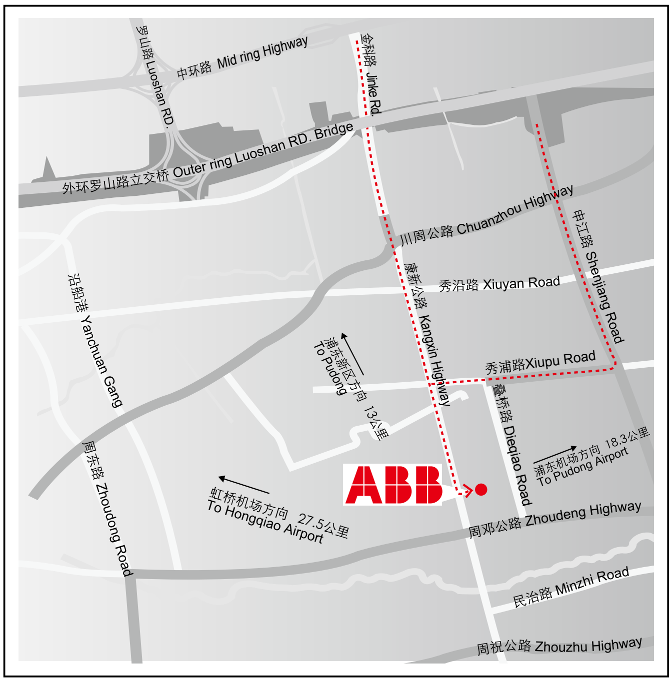
Completed this course, you may able to
- Understand IO signals
- Be able to complete program with help of Rapid manual
- Understand safety working area by WorldZone setting
- Understand Interrupt routine
- Understand error handler routine
- Understand robotics electronic principle
- Understand manipulator maintenance
- Play with RobotStudio
- Understand the usual method of an application (Material Handing, Integrated Vision)

Contents
- RAPID program structure
- Routine type
- Interrupt routine
- Error handler
- WorldZone function
- Electrical principle
- Manipulator maintenance
- RobotStudio introduction
- Case study
- Hands-on Job

Information

• Duration:	5 days
• Number of participants:	8-10 persons per robot

交通
Transportation



上海ABB机器人培训中心位于上海ABB工程有限公司内部，具体地址为上海市浦东新区康新公路4528号（地铁11号康新公路2号口）。

- 培训中心距离上海火车站和上海长途汽车总站约30公里左右，出租车单程约100元左右。
- 培训中心距离虹桥国际机场和虹桥火车站约35公里左右，出租车单程约120元左右。
- 培训中心距离浦东国际机场约25公里左右，出租车单程约90元左右。

ABB Robotics Shanghai Training Center is located in ABB Engineering (Shanghai) Ltd. The detailed address is No.4528, Kangxin Highway, Pudong New District, Shanghai Metro line 11（Kang Xin highway）No. 2 door.

- The distance between ABB Robotics Shanghai Training Center and Shanghai railway station or Shanghai long-distance bus station is about 30KM, the one way taxi fee is about 100 RMB.
- The distance between ABB Robotics Shanghai Training Center and Hongqiao international airport or Hongqiao railway station is about 35KM, the one way taxi fee is about 120 RMB.
- The distance between ABB Robotics Shanghai Training Center and Pudong international airport is about 25KM, the one way taxi fee is about 90 RMB.

住宿
Accommodation

距离我司较近的宾馆信息如下（仅供参考，详情请直接联系宾馆的预定电话）

- **上海如家快捷酒店（周浦店）**
  价格：ABB 协议价 RMB180
  地址：上海市浦东新区秀浦路 886，近年家浜路万达广场（距离我司约 2 公里）
  电话：021-61760058-9

- **上海康桥凯莱酒店**
  价格：ABB 协议价 RMB300
  地址：上海浦东新区康桥川周公路 2689 号近申江路（距离我司约 3 公里）
  电话：021-68070000

- **上海浦东绿地假日酒店（上海浦东假日盛高酒店）**
  价格：ABB 协议价 RMB500
  地址：上海浦东新区秀沿路 1088 号（距离我司 2 公里）
  电话：021-38291888

- **上海利爵商务酒店**
  价格：ABB 协议价 RMB278，酒店早晚有车接送
  地址：上海浦东新区周康路 169 号，近年家浜路万达广场（距离我司约 2 公里）
  电话：021-38010101

Several recommended hotels near ABB Robotics Shanghai Training Center below

- **Home Inns, Shanghai Zhoupu**
  Price : ABB contract price is RMB180
  Address : No. 886, XiuPu Road, Near Nian Jia bang road in Wanda plaza,Pudong, Shanghai. (2km away from ABB)
  Tel : 021-61760058-9

- **Kai Lai Hotel Shanghai Kangqiao**
  Price : ABB contract price is RMB300
  Address : No. 2689, road Chuanzhou, Pudong, Shanghai. (3km away from ABB)
  Tel : 021-68070000

- **Holiday Inn Shanghai Pudong Kangqiao**
  Price : ABB contract price is RMB500
  Address : No. 1088, Xiuyan Road, Pudong, Shanghai. (2km away from ABB)
  Tel : 021-38291888

- **Li Jue Business Hotel , Shanghai Kangqiao**
  Price : ABB contract price is RMB278 (Hotel provides shuttle bus to ABB)
  Address : No. 169, road Zhoukang, Pudong, Shanghai. (2km away from ABB)
  Tel : 021-38010101

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ABB机器人客户服务热线：400 920 9090
ABB Robot Customer Service Hot Line: 400 920 9090

ABB机器人客户服务邮箱：cs.robot@cn.abb.com
ABB Robot Customer Service e-mail: cs.robot@cn.abb.com

ABB机器人中文网站：https://new.abb.com/cn
ABB Robot Webpage：https://new.abb.com/cn

ABB机器人上海培训中心主页：https://new.abb.com/service/zh/abb-university/China-ZH/%E6%9C%BA%E5%99%A8%E4%BA%BA%E5%9F%B9%E8%AE%AD%E4%B8%AD%E5%BF%83
ABB Robotics Training Center Webpage：https://new.abb.com/service/zh/abb-university/China-ZH/%E6%9C%BA%E5%99%A8%E4%BA%BA%E5%9F%B9%E8%AE%AD%E4%B8%AD%E5%BF%83

ABB 机器人培训中心公共邮箱：cn-cs.training@abb.com
ABB Robotics Training Center Public Email：cn-cs.training@abb.com

★ 课程/技能等级证书
ABB颁发的机器人培训合格结业证书或者技能等级证书验证地址和操作步骤:
1、学员或第三方可以通过扫描证书上的二维码，或者登录以下网址
https://cloudapps02.abb.com.cn/9aag023160/Home/Index （建议使用Chrome Google 浏览器访问）
进行证书有效性验证

2、登录后操作步骤：
Step1登录网站链接→ Step2 输入证书编码&密码（身份证号码后四位或手机号码后四位）→ Step3 页面即可显示培训证书

★ ABB中国大学网站简介
http://new.abb.com/service/zh/abb-university/China-ZH/机器人培训中心/
中国ABB机器人培训中心将提供丰富的培训项目和课程以满足不同用户的需求