

Welcome to PHOENIX CONTACT

风电行业解决方案

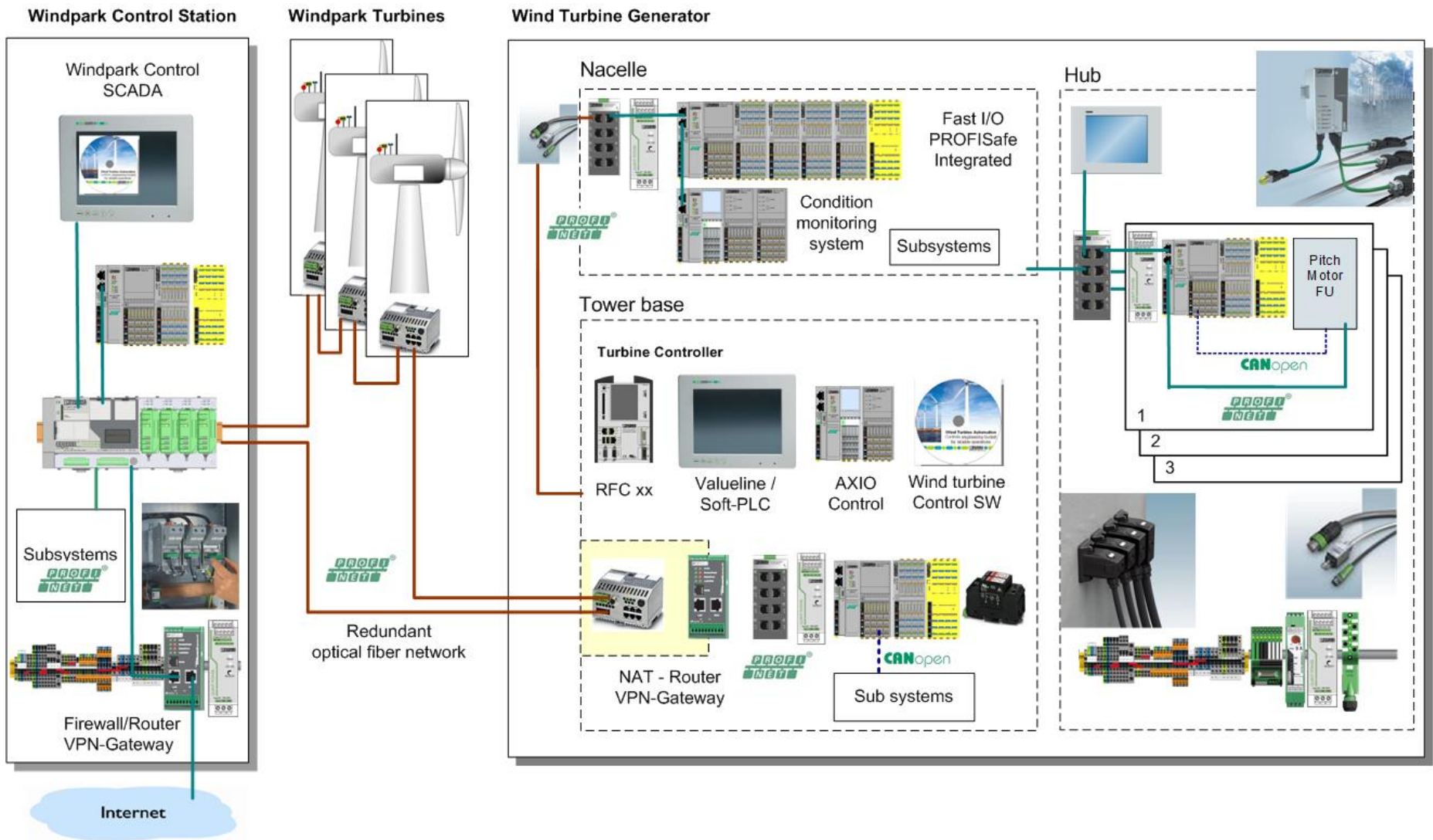


华阳众能
HYZONENG

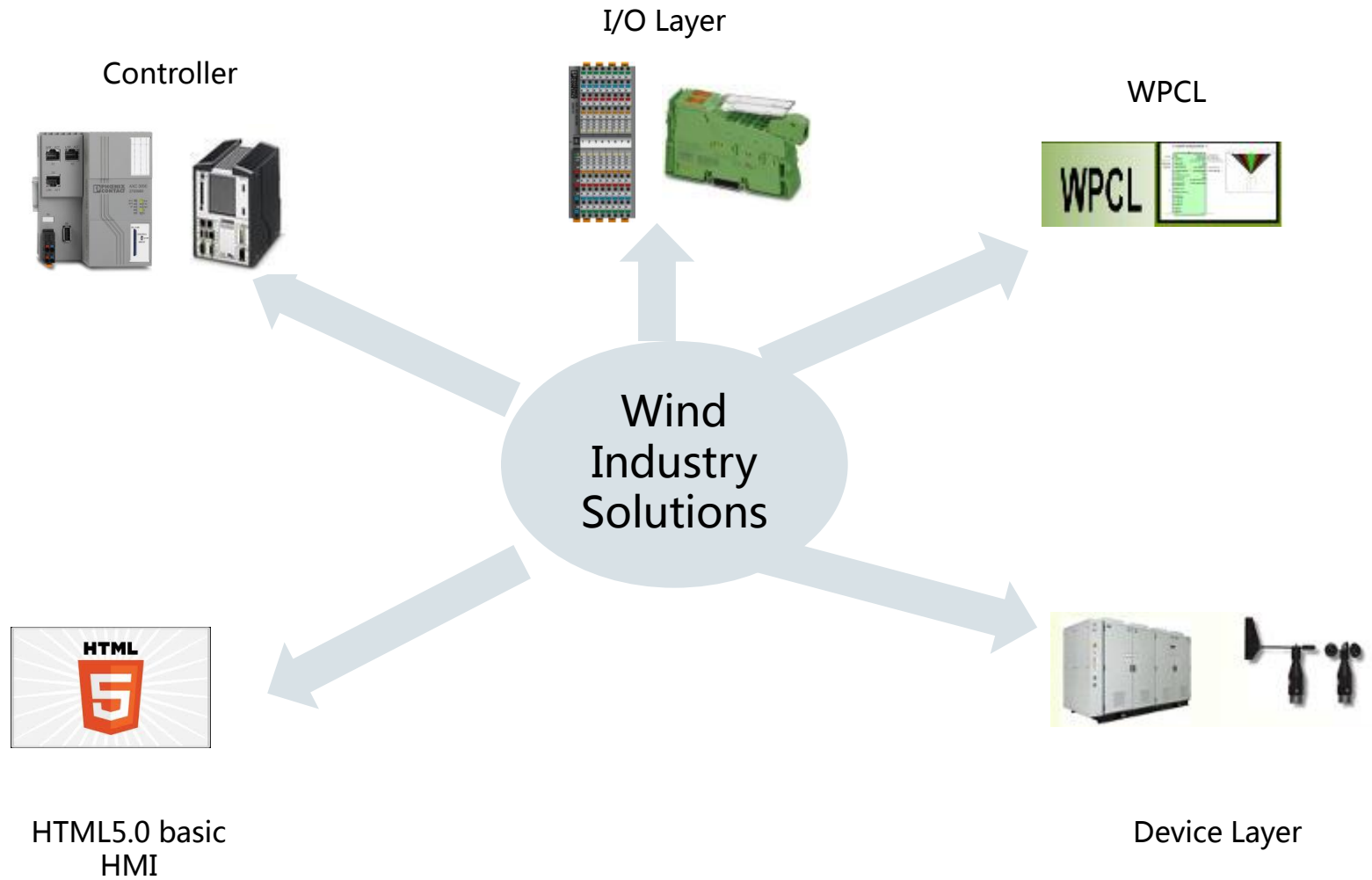
主控系统



风电行业解决方案

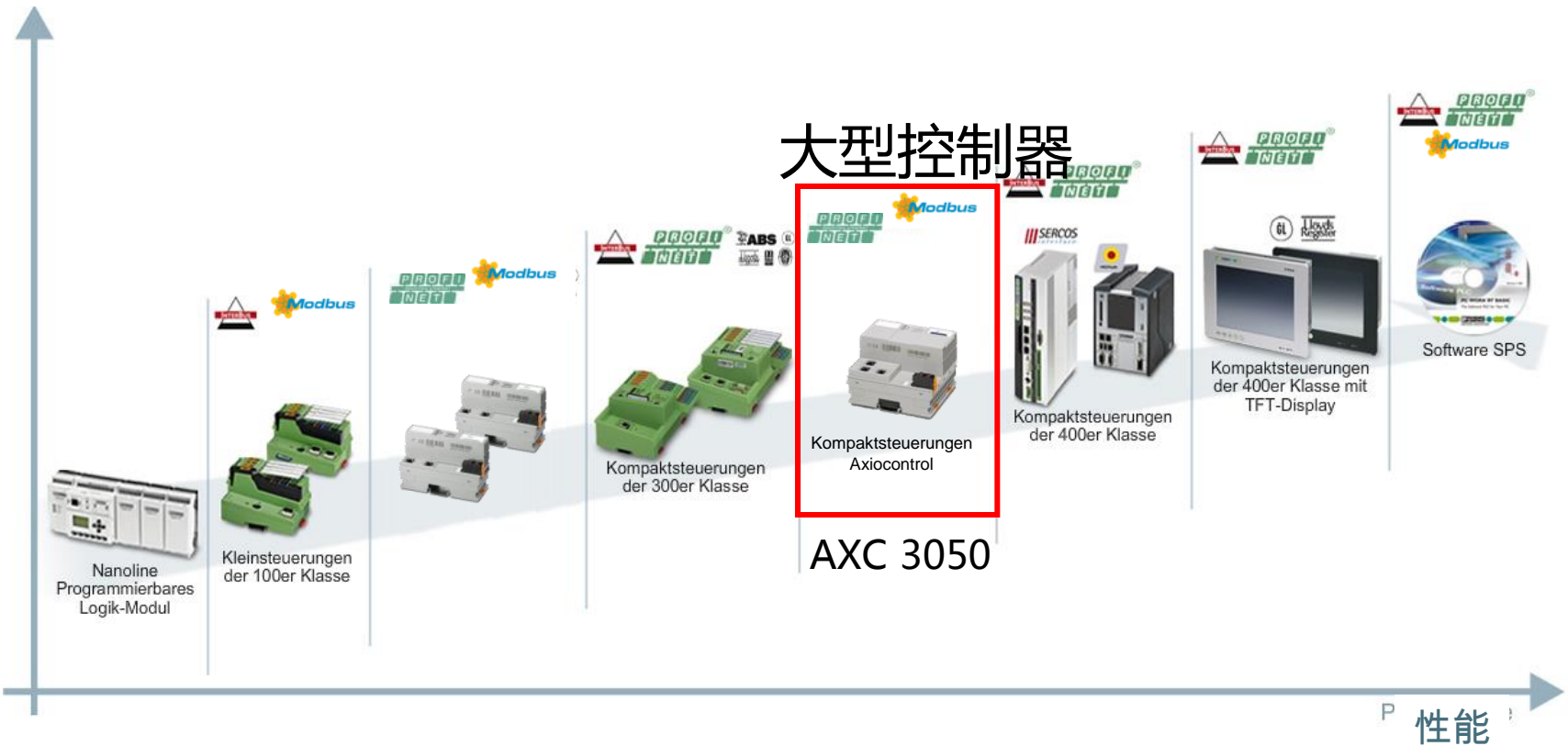


风电行业解决方案



Axioccontrol 控制器

功能



Axioccontrol系列PLC

AXC 3050

- Intel® Atom™ E660 1.3 GHz
- 4 μ s 每1000位指令
- 4 M Byte 程序存储空间
- 8 M Byte 数据存储空间
- 128 K Byte 保持空间
- Profinet Controller and Device功能
- Modbus TCP 客户端
- Web-/FTP-Server, OPC, UDP, TCP/IP, SNT, SQL, SNMP



Axioccontrol系列PLC

AXC 3050

- 可并排安装多达63个AXIO I/O模块
- 集成的UPS不间断电源，用于有针对性地关闭应用程序
- 通过USB进行编程和组态
- Web服务器HTML5和JAVA
- SD卡最大可达2 GB，用作可选的插拔式参数存储器
- 3x以太网接口
- 抗电磁干扰性能增强
- 扩展温度范围为-25° ... +60°C



Axioccontrol系列PLC

可直接与 Axioline IO连接

快速

- 与Axioline F 系列IO连接，速度更快
- 更好的应用性能

可靠

- 满足极端环境应用要求
- 更好的EMC

易用

- 易于使用
- 易于编程
- 易于通讯



Axiocontrol系列PLC特点

坚固

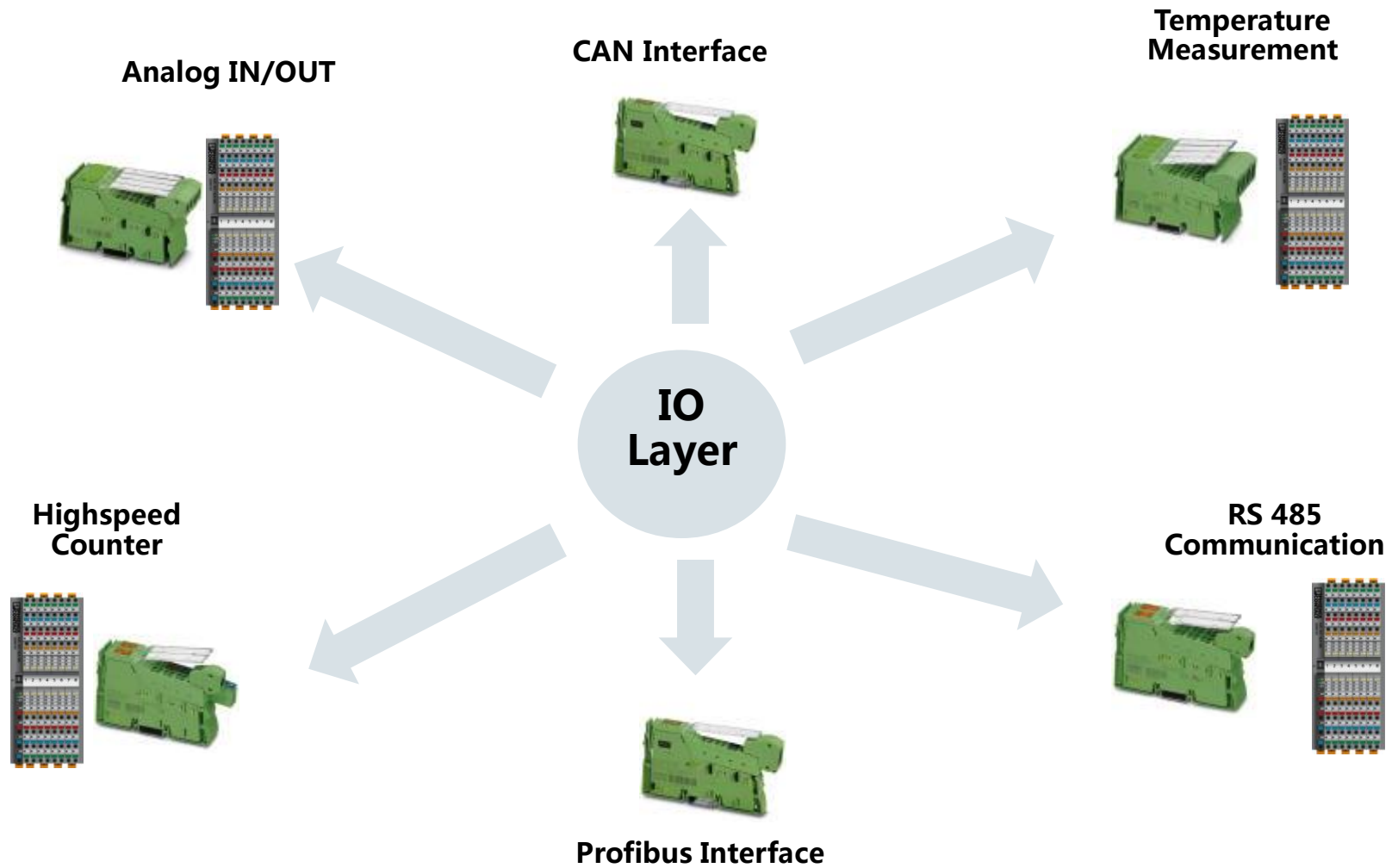
- 高可用性
 - 集成UPS
 - 适用极端环境
 - 宽温 (-40°)-25°...+60°C
- 抗振性强
- 非常好的电磁兼容性
- 坚固设计
- 具有多种认证

ROBUST



➔ 保证了系统的最大可用性

IO 硬件

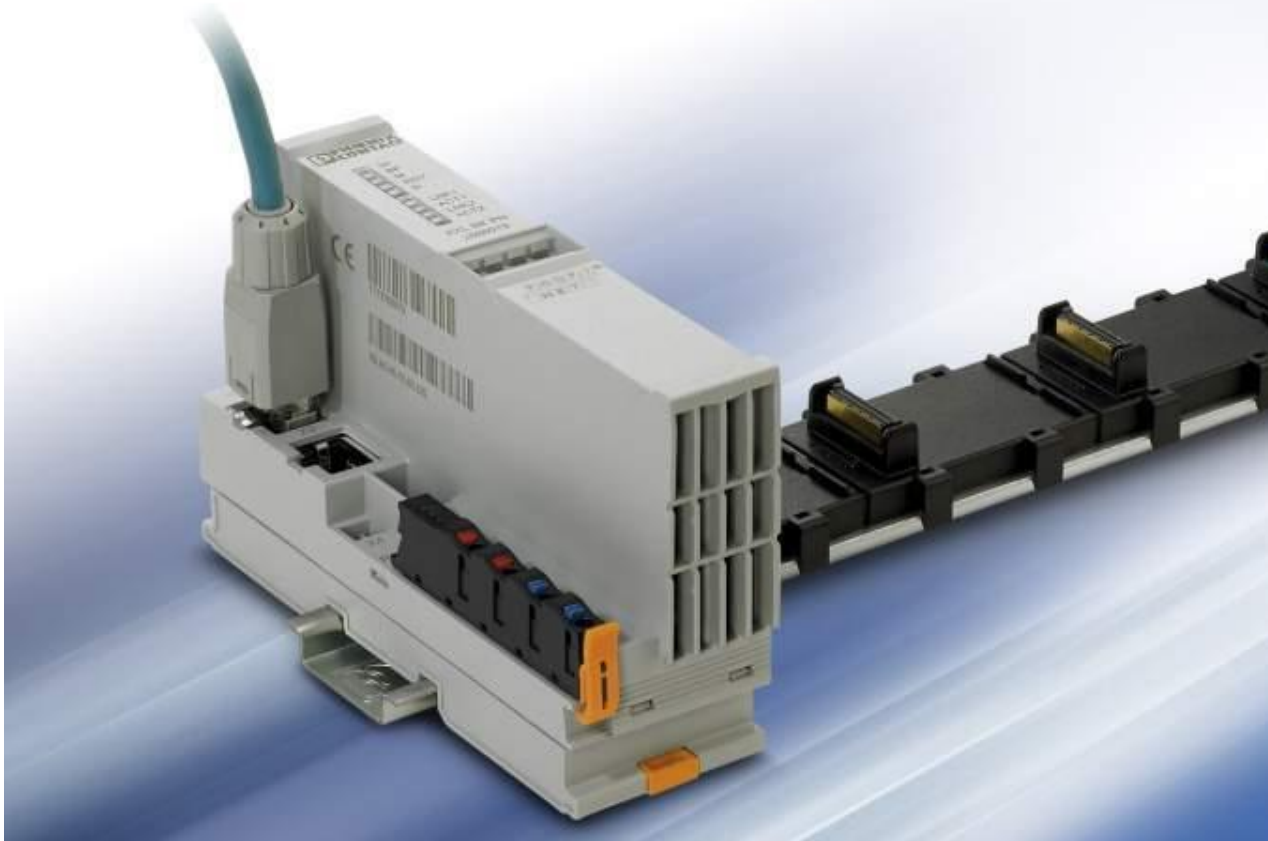
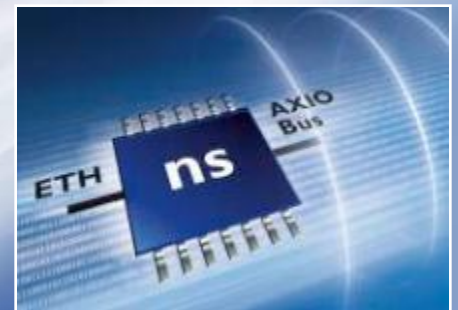


IO 硬件

- 快速计数、SSI、INC用于转速、角度测量
- CAN通讯和PROFIBUS通讯可选
- 风速、风向、压力测量的模拟量模块
- 发电机等温度采集的模块
- 用于与电量表通讯的RS485模块

Axioline F系列IO : 快速

- 比其他所有I/O都快速, 模块传输速度**1 μ s**



Axioline F系列IO : 坚固

- 外壳坚固，抗冲击**30g**
抗震动**5g**
- 增强EMC电磁兼容性，
等级**Class B**,
- 宽温：**-25°C~60°C**



Axioline F系列IO : 易用

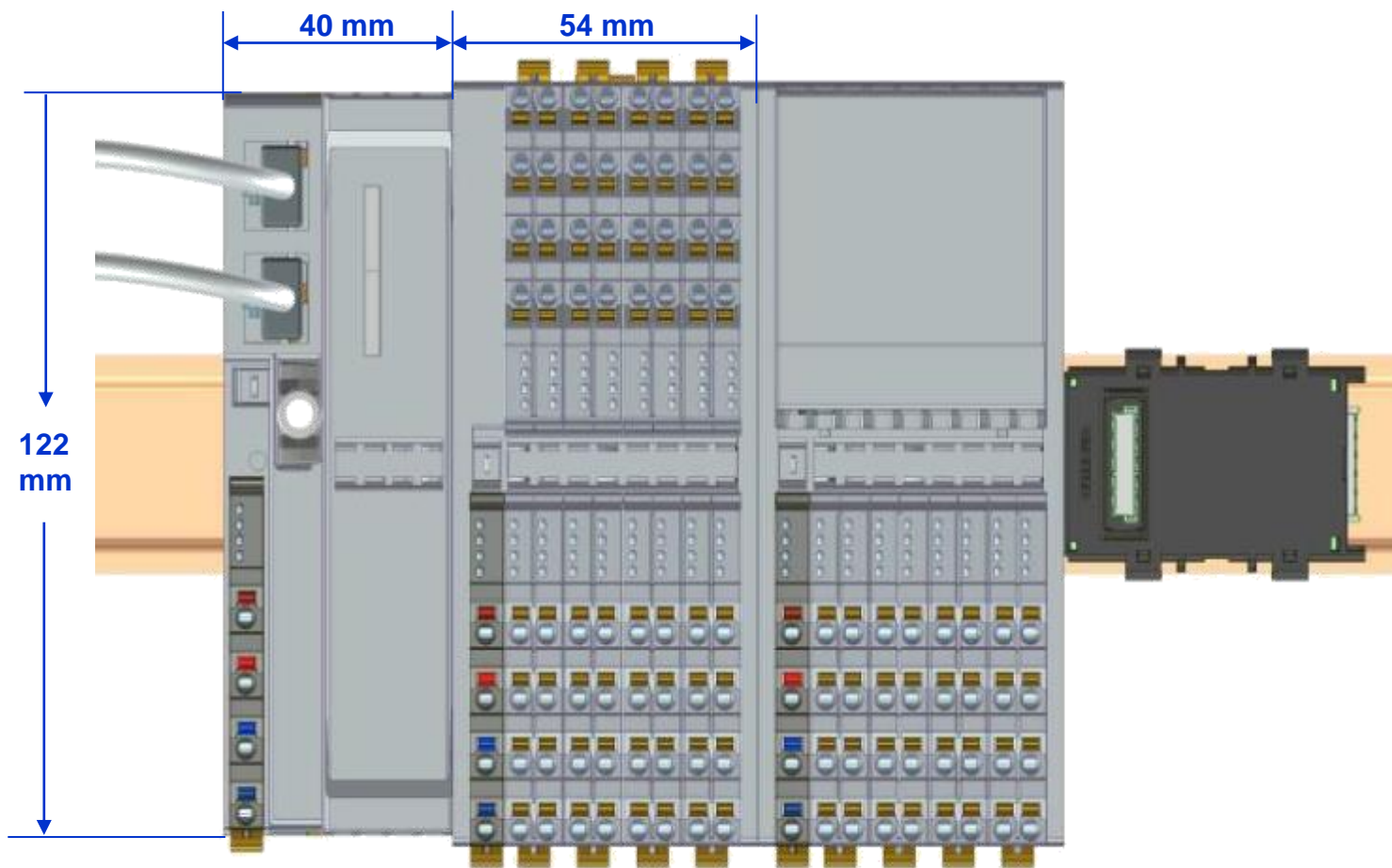
- 直插式连接技术
- 智能化布线
- 灵活的系统标识
- USB接口和Startup+调试软件



实时I/O

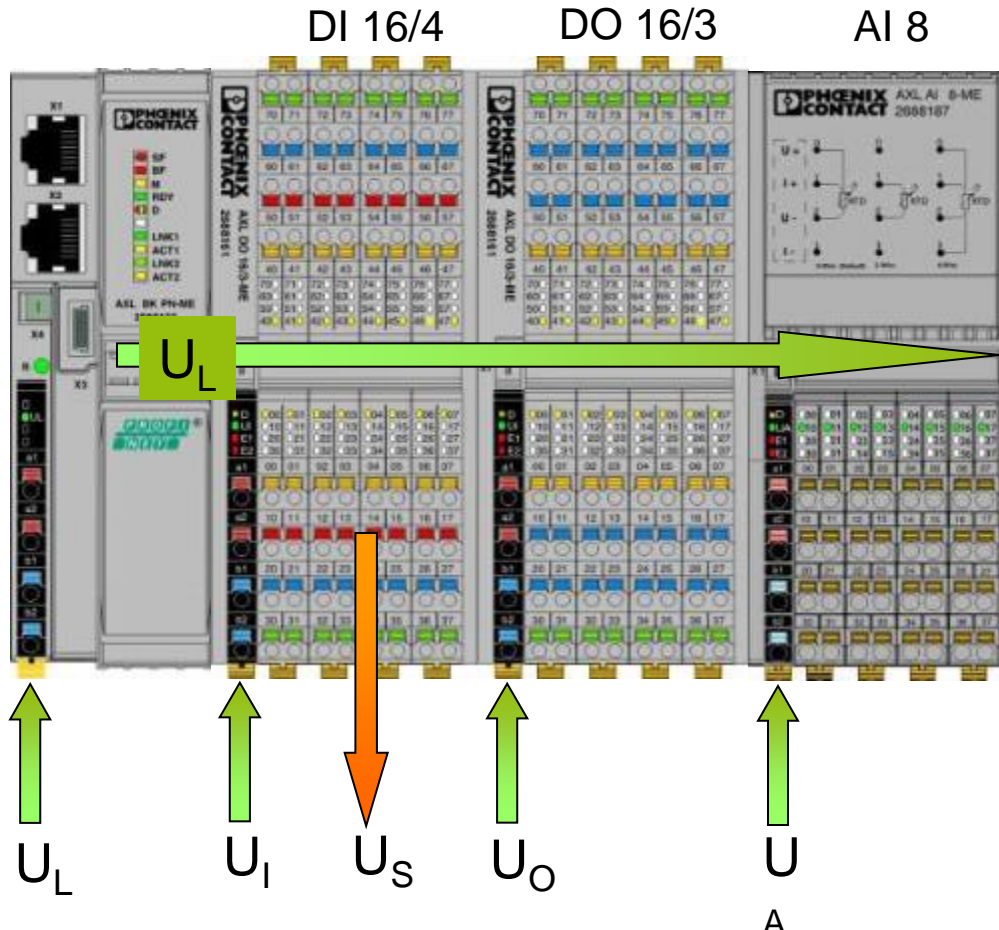


Axioline控制系统紧凑的尺寸



64点DI模块宽度仅54mm，标准深度仅为74mm

Axioline控制系统易用的供电方式



Power supplies:

U_L ...Logic

U_I ...Input (dig.)

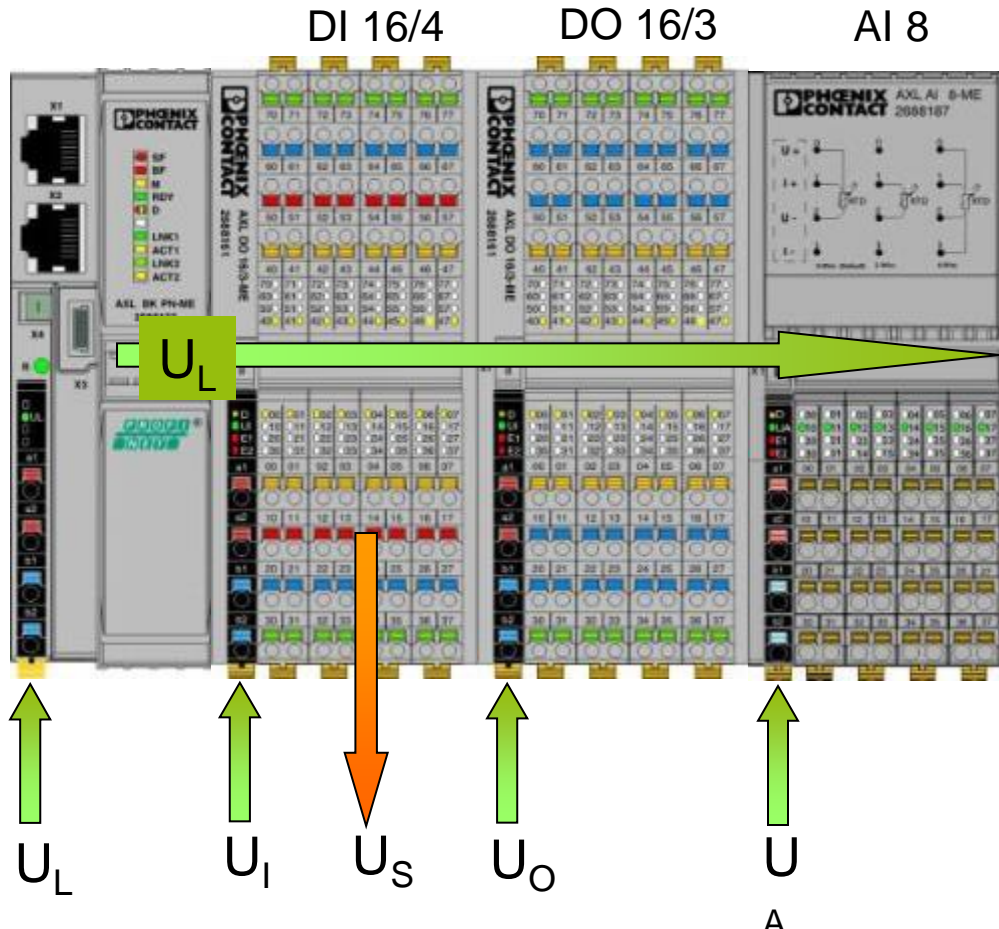
U_O ...Output (dig.)

U_S ...Sensor

U_A ...Analog

电源隔离，无需额外扩展电源，每个模块单独供电！

Axioline控制系统强大的扩展能力



Power supplies:

U_L ...Logic

U_I ...Input (dig.)

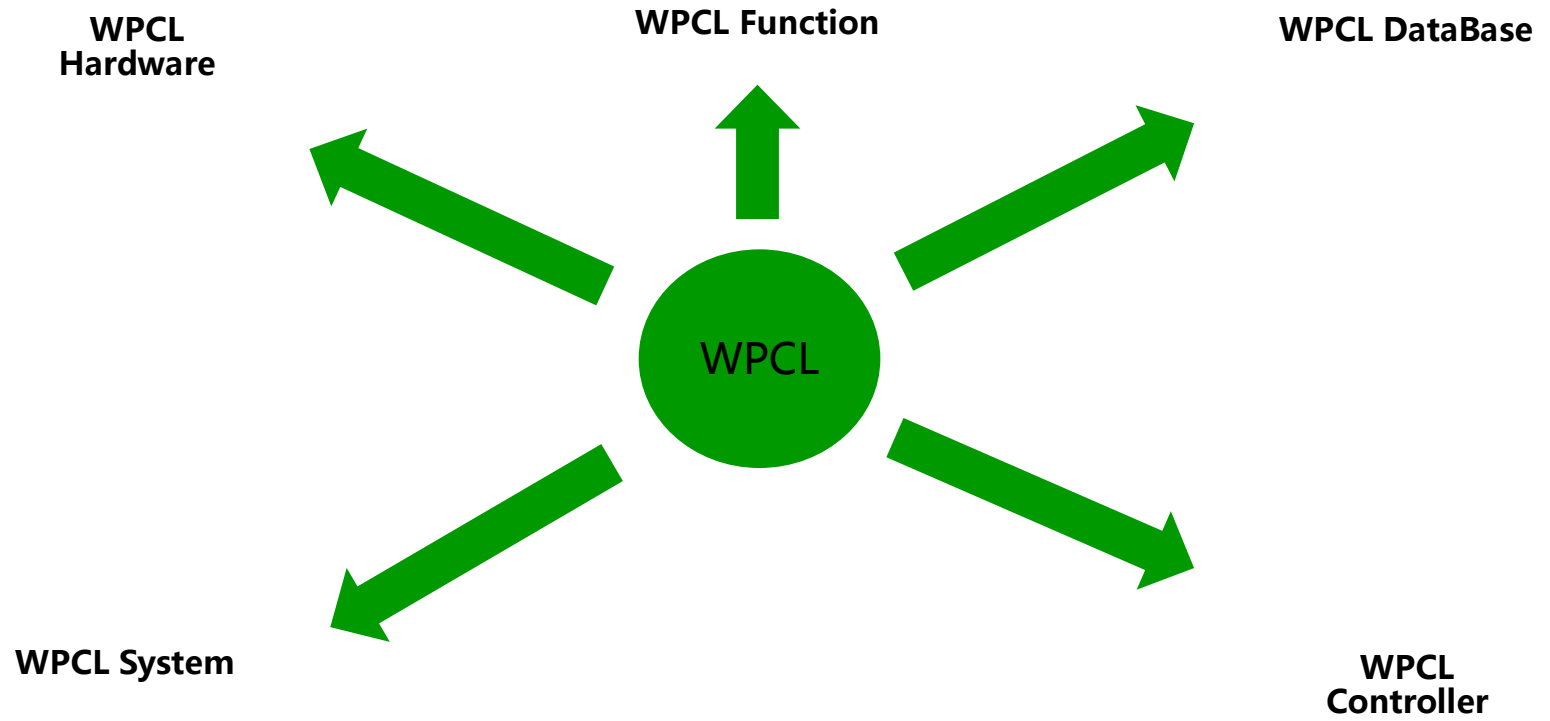
U_O ...Output (dig.)

U_S ...Sensor

U_A ...Analog

总线耦合器最多扩展63个模块！

WPCL



WPCL Hardware

- Modbus TCP
- Modbus RTU Master
- Modbus RTU Slave
- Analog 、 SSI、 INC、 Temperature、 Power measurement
- Web-Server、 FTP-Server

WPCL 参数数据库

- 读初始化值通过XML 文件
- 修改初始化值通过XML 文件
- 支持变量数据类型: 所有的标准数据类型
- 支持全局和局部变量

Name	Type	Usage	Description	Address	Init	Retain	PDD	OPC	TB	Hid.	Init...	Default Hid...	Device	Signal
Default														
System Variables														
Auto														
dTickCntEv1	DINT	VAR_GLOBAL				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
CYCLE_OUT	DINT	VAR_GLOBAL				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
XrEWVALUE	BOOL	VAR_GLOBAL				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

- 在变量表中需要对进行参数化的变量，在PDD选项中

WPCL参数数据库文件格式

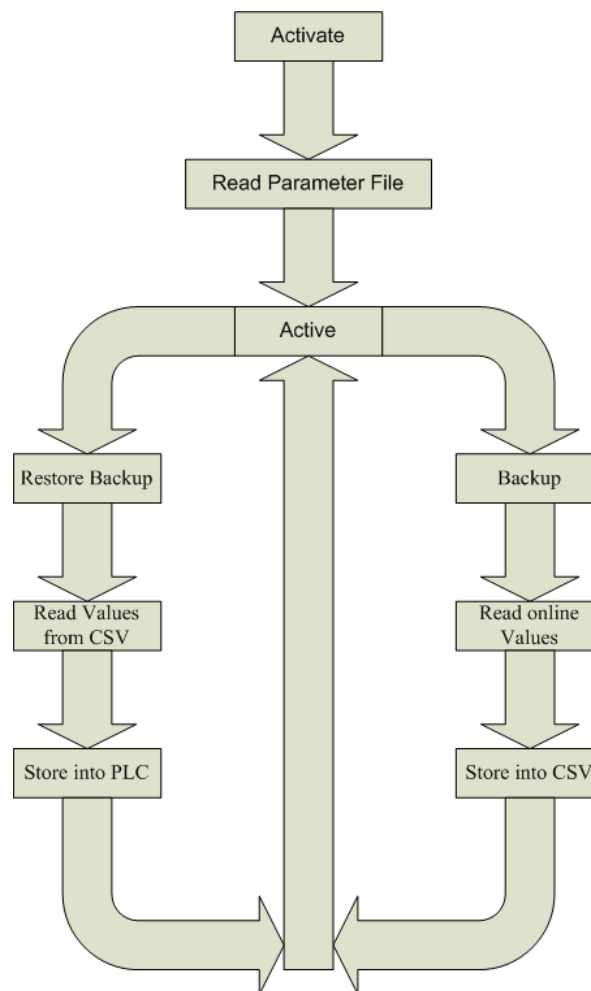
```
<Parameter uniqueID="995" VariableName="MainLoop.MainLoop.tInitMinTimeStopToStandstill" DataType="TIME" Value="T#5000">  
  <label xml:lang="de">waiting time from stopmode to standstill s</label>  
  <label xml:lang="en-us">waiting time from stopmode to standstill s</label>  
</Parameter>
```

参数实例

- 属性描述:
 - uniqueID = ID标号必须是唯一的
 - VariableName = 变量名在编程软件中
 - DataType = 变量的数据类型在编程软件中
 - Value = 变量的初值
 - Label = 变量在Web窗口的描述

WPCL 数据备份系统

- 功能块用于数据备份
- 用于存储PLC冷启或者硬件更换后，需要保持数据的功能
- 不要经常进行执行数据备份功能，不然可能导致存储卡损坏。
- 存储文件的格式为TXT或者CSV,可以正常的文件操作



WPCL 数据缓存文件

- 功能块可以用于数据缓存文件
- 该功能可以用于存储风机故障前后30S的数据
- 支持所有的标准数据类型
- 可以支持全局变量和局部变量
- 该文件为CSV格式的文件可以被正常打开

```
# : buffersave version 0.18 02.05.2011
#
# Logfile
# Event Time: 2014.04.24 22:32:56
```

Time	grid UL1	grid UL2	grid UL3	grid I1	grid I2	grid I3	grid freq
-1500	399	398.5	396.6	57	60	60	50.06
-1499	399	398.5	396.6	57	60	60	50.06
-1498	399	398.5	396.6	57	60	60	50.06
-1497	399	398.5	396.6	57	60	60	50.03
-1496	399	398.5	396.6	57	60	60	50.03
-1495	399	398.5	396.6	57	60	60	50.04
-1494	399	398.5	396.6	57	60	60	50.04
-1493	399	398.5	396.6	57	60	60	50.04
-1492	399	398.5	396.6	57	60	60	50.04
-1491	399	398.5	396.6	57	60	60	50.04
-1490	399	398.4	396.9	60	60	61	50.04
-1489	399	398.4	396.9	60	60	61	50.04
-1488	399	398.4	396.9	60	60	61	50.04
-1487	399	398.4	396.9	60	60	61	50.03
-1486	399	398.4	396.9	60	60	61	50.03
-1485	399	398.4	396.9	60	60	61	50.03
-1484	399	398.4	396.9	60	60	61	50.03
-1483	399	398.4	396.9	60	60	61	50.03
-1482	399	398.4	396.9	60	60	61	50.03
-1481	399	398.4	396.9	60	60	61	50.03
-1480	399	398.5	396.6	59	61	60	50.03
-1479	399.1	398.5	396.8	58	58	60	50.03
-1478	399.1	398.5	396.8	58	58	60	50.03
-1477	399.1	398.5	396.8	58	58	60	50.04
-1476	399.1	398.5	396.8	58	58	60	50.04
-1475	399.1	398.5	396.8	58	58	60	50.04
-1474	399.1	398.5	396.8	58	58	60	50.04
-1473	399.1	398.5	396.8	58	58	60	50.04

WPCL 数据故障文件

- 功能块用于存储故障文件
- 当风机故障时，可以记录故障时重要变量的值，用于故障分析。支持所有的标准数据类型
- 可以支持全局变量和局部变量
- 故障文件支持IE浏览器显示

ambient_temperature			
err_ambient_temp_max	off	err_ambient_temp_min	off

autostart			
err_max_NOs_of_autoS_reach	On	autoS_state_en	on

cabinet cooling			
err_LVD_cab_temp_hi	off	err_LVD_cab_temp_lo	off
err_towerB_ambient_temp_hi	off	err_towerB_ambient_temp_lo	off
err_topbox_cab_temp_hi	off	err_topbox_cab_temp_lo	off
err_CVT_box_cab_temp_hi	off	err_CVT_box_cab_temp_lo	off

WPCL 系统功能

- 获得系统信息
 - 可以从PLC系统中读取相关参数例如:
 - IP地址信息
 - Firmware version
 - Hardware version
 - 序列号
 - Firmware 名称
 - MAC 地址
- 实时时钟
 - 与PC实时时钟同步

HTML 5.0 Layer

Phoenix Contact Wind Turbine Solution - Mozilla Firefox

Phoenix Contact Wind Turbine Solution

http://192.168.0.107/

PLC Time: 09.02.2012 08:38:29.900
User: Administrator

Starting
Active Events: 2

Actual nominal power: 0.00
Wind Speed: 8.01

User: Administrator
Password:

PHOENIX CONTACT

Home

Home Yaw CCU Alarm EventBuffer HistoryTrend Diag PN_Diag EthDiag Settings Parameter Info

Turbine Status
Starting

Control

Start Stop

General Data

Rotorspeed / rpm:	6.95
Autostart is enabled	
Seconds till next restart:	60.00
Yaw Position / Degr:	0.00
Yaw Inactive	
Unwind Inactive	
Pitchposition:	90.00
Wind direction 25s Avg:	160.91
Wind speed 30s Avg:	8.01

Transformer data

Actual nominal power:	0.00
Actual reactiv power:	0.00
U L1 N:	0.00
U L2 N:	0.00
U L3 N:	0.00
I L1:	0.00
I L2:	0.00
I L3:	0.00
Frequenz:	0.00
Generator speed:	0.00
60 Min Avg Power:	0.00

6.95 rpm

Pitch set: 90.00°
Pitch 1 position: 90.00°
Pitch 2 position: 90.00°
Pitch 3 position: 90.00°
Wind speed: 9.60m/s

Wind speed simulation: 10
Wind speed offset simulation: 0

HTML 5.0 Layer Yaw

Phoenix Contact Wind Turbine Solution - Mozilla Firefox

http://192.168.0.107/

PLC Time: 09.02.2012 10:08:22.780
 User: Administrator

Power production
 Active Events: 2

Actual nominal power: 1050540.00
 Wind Speed: 10.00

User: Administrator
 Password:

Yaw

Home | Yaw | CCU | Alarm | EventBuffer | HistoryTrend | Diag | PN_Diag | EthDiag | Settings | Parameter | Info

Wind Data	
Wind direction 25s Avg 1:	160.90
Wind direction 25s Avg 2:	160.90
Wind direction 25s Avg:	160.90
Wind direction 60s Avg 1:	159.50
Wind direction 60s Avg 2:	159.50
Wind direction 60s Avg:	159.50
Wind speed 30s Avg 1:	10.00
Wind speed 30s Avg 2:	10.00
Wind speed 30s Avg:	10.00
Wind speed 30s Avg 1:	10.00
Wind speed 30s Avg 2:	10.00
Wind speed 30s Avg:	10.00

Yaw Parameter	
[deg] init yaw position limit value (abs-value), to start the cable unwind:	730.00
[deg] init yaw position misalignment Level1 at low wind:	8.00
[deg] init yaw position misalignment Level2 at low wind:	15.00
[deg] init yaw position misalignment Level1 at high wind:	8.00
[deg] init yaw position misalignment Level2 at high wind:	15.00
[s] init yaw waiting time, activating yawing, Level1 low wind:	210.00
[s] init yaw waiting time, activating yawing, Level2 low wind:	20.00
[s] init yaw waiting time, activating yawing, Level1 high wind:	210.00
[s] init yaw waiting time, activating yawing, Level2 high wind:	20.00
[m/s] init yawing min. wind speed limit for yawing activities:	2.50
[m/s] init yaw, limit value for high wind detection -> system use Level2 values:	9.00
[deg/s] init min limit yawing speed / speed lower than limit -> use Level2 values:	0.20

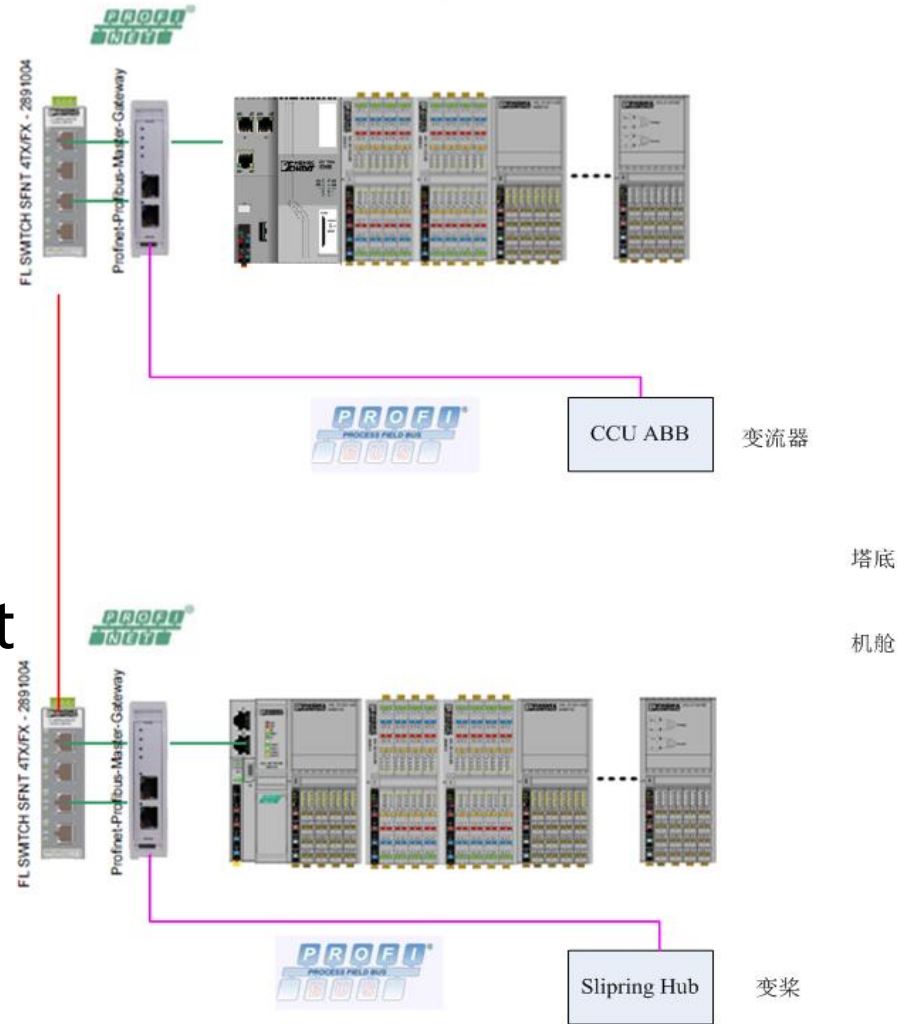
Absolute position

Yaw data	
Actual Yaw position:	0.00
Yaw inactive:	
Unwind Inactive:	
Wind direction left:	
Yawing Speed:	0.00
Deviation wind nacelle position:	-18.14
Unwind move right:	0.00

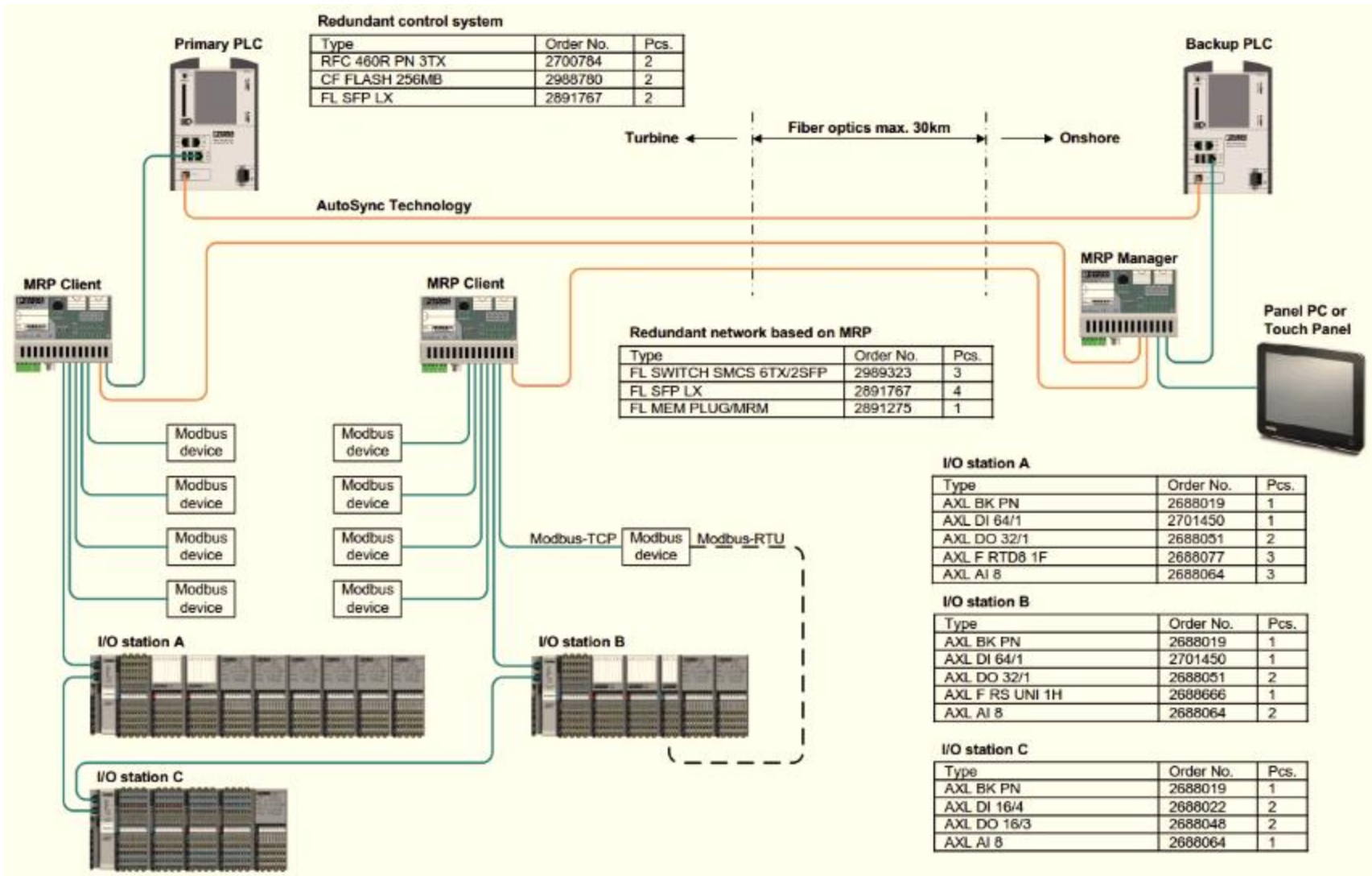
Windows Taskbar: Start, PC WORX, Windows Taskbar, HTML Help, Phoenix Con... 11:08

主控系统网络拓扑图

- Modular high-performance Controller AX3050
- Fast, robust, easy – Axioline I/O
- PROFIBUS, PROFINET, CAN, Optic, Safety

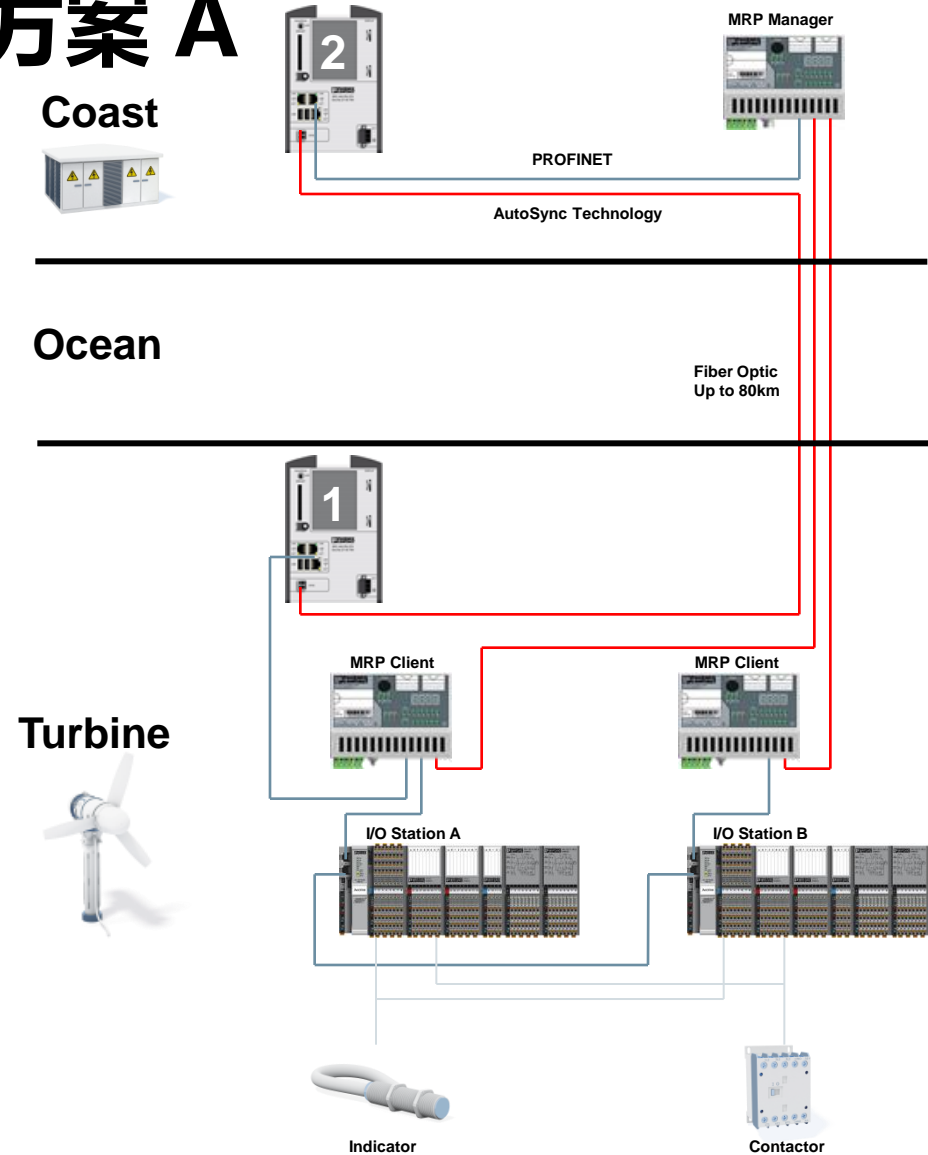


海上风机系统方案



海上风机冗余系统解决方案 A

- Control:
 - RFC460R
 - Low Switching Times
 - Redundancy Systems (up to 80km)
 - Automatic Synchronisation/Update
- Network:
 - SMCS Switch
 - Redundancy Protocol (MRP)
 - Diagnostic Function

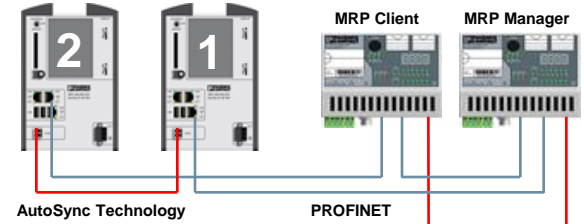


海上风机冗余系统解决方案 B

- Control:
 - RFC460R
 - Low Switching Times
 - Redundancy Systems (up to 80km)
 - Automatic Synchronisation/Update
- Network:
 - SMCS Switch
 - Redundancy Protocol (MRP)
 - Diagnostic Function



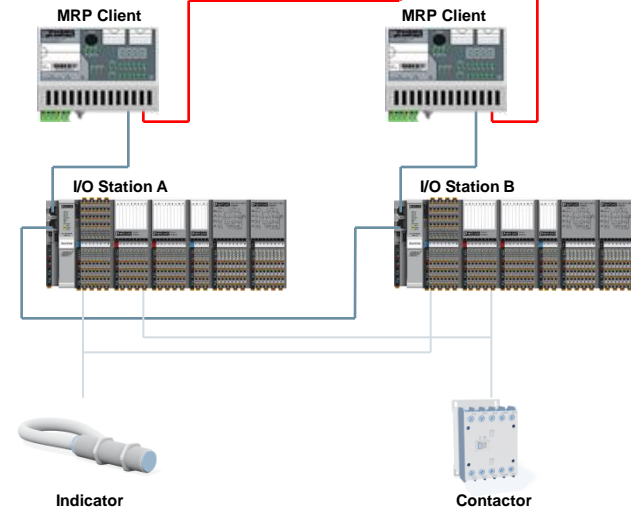
Coast



Ocean

Fiber Optic
Up to 80km

Turbine



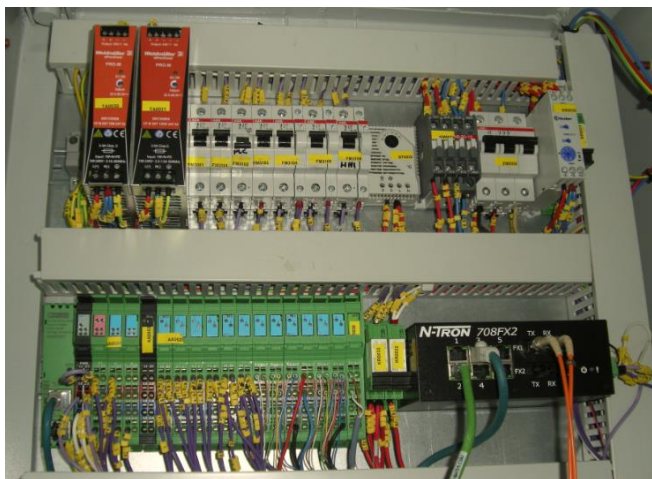
应用照片金风2.5MW



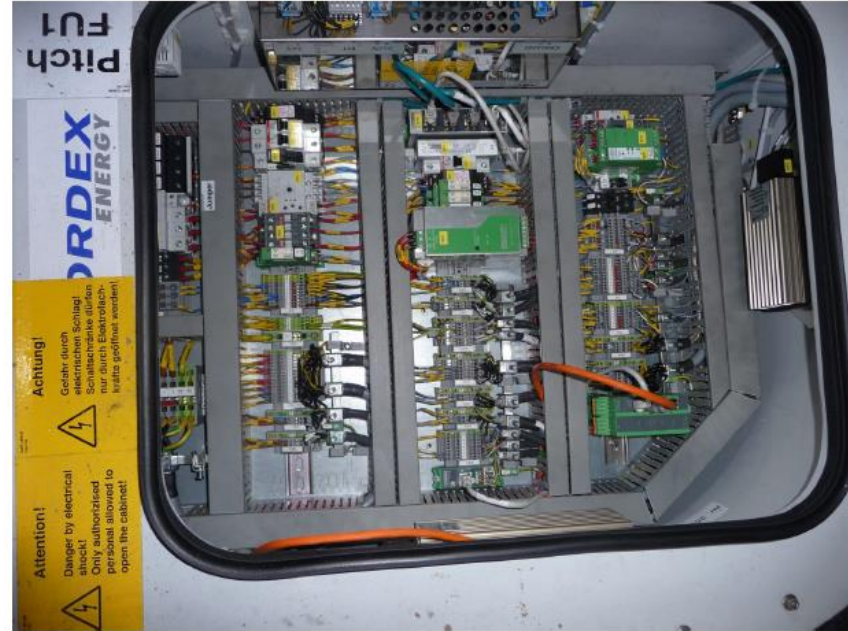
应用照片联合动力1.5MW



Gamesa 4.5MW 系统配置



客户应用图片分享

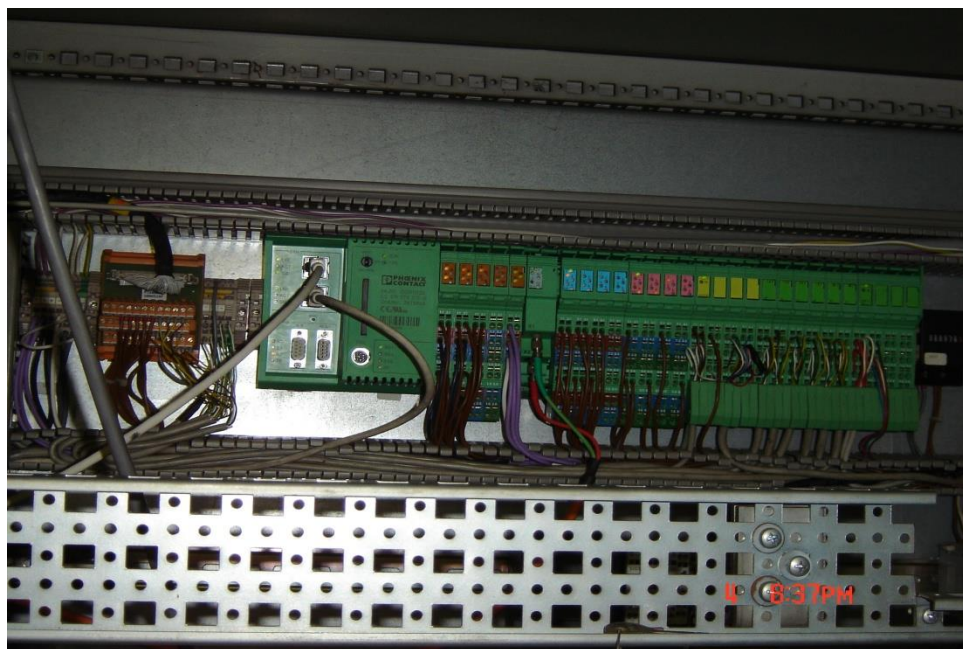


客户应用图片分享



中船重工(重庆)海装风电设备有限公司

CSIC (Chongqing) Haizhuang Windpower Equipment Co.,Ltd.



客户应用图片分享



Questions and answers





**for your
attention !**