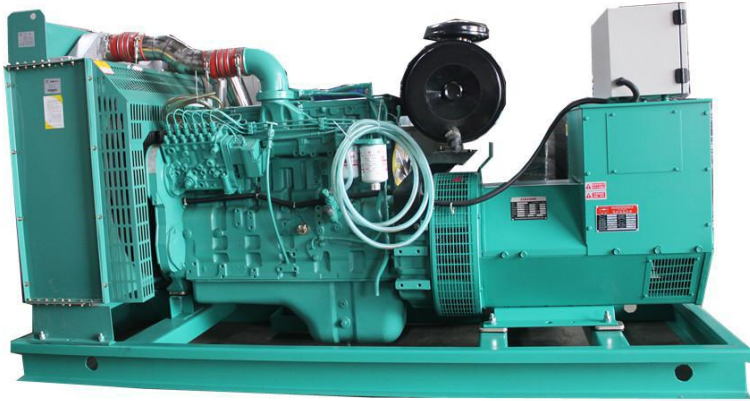




帕特康明斯系列柴油发电机组

PAT-TECH CUMMINS SERIES DIESEL ENGINE GENERATOR



PC160P

发电机组额定容量 RATINGS AND PERFORMANCE DATA

| 型号 Model | | PC160P / PC176S | | | | | | |
|-----------------------|---------------------|----------------------------|-------------------------------|----------|--------------------|-----|----------------------|-----|
| 频率 Frequency Hz | 电压 Voltages V | 额定转速 Rated Speed RPM | 功率因数 Power Factor Cos Φ | 相数 PH | 主用 Prime Rating | | 备用 Standby Rating | |
| | | | | | kVA | kW | kVA | kW |
| 50 | 400/231 | 1500 | 0.8 滞后 lagged | 3 | 200 | 160 | 220 | 176 |

60Hz 及其它电压等级机组请与工厂联系

Consult factory for 60Hz and other voltages.

定义 DEFINITIONS

主用功率 Prime Rating

主用功率适于连续地对变化负载提供电力输出，没有年度运行时间限制。主用功率可在 12 小时内提供 1 小时 10% 过载运行。

There ratings are applicable for supplying continuous electrical power at variable load. There is no limitation to the annual hours of operation and this model can supply 10% overload power for 1 hour in 12 hours.

备用功率 Standby Rating

备用功率适于在市电故障时对变化负载提供连续电力输出，年度运行低于 500 小时。备用功率机组没有过载能力。

There ratings are applicable for supplying continuous electrical power at variable load in the event of a mains power failure.

500 hours limited for 1 year and no overload is permitted on these ratings.

标准工况 Standard Reference Conditions

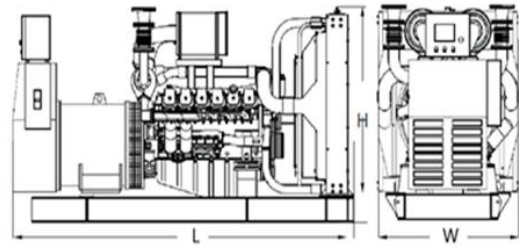
标准工况 25℃ 环境温度，100m 海拔，30% 的相对湿度下测试。

Standard reference conditions 25℃ Air Inlet Temp., 100m A.S.L., 30% relative humidity.



主要特点 Main Features

- 帕特公司提供所供产品全部直接品质保证
PAT-TECH provides one-source responsibility for the generators and accessories
- 电气性能满足 ISO 8528-5 性能标准
Transient performance meets ISO 8528-5
- 高品质、可靠的功率输出
High quality and reliability power output
- 结构简单，功率损耗小，故障率低
Simple structured, lower power loss, lower fault
- 允许在较宽的温度范围内工作而不需修正
Able to be operating under wide ambient conditions without de-rating output
- 独立的燃油直接喷油系统保证最佳燃油雾化并快速经济有效地燃烧
Independent fuel fire system to ensure best fuel atomization and economic combustion
- 易启动，保持紧急备用
Easy startup and suitable for emergency application
- 多种控制器可供项目选用
Controllers are available to meet all applications



尺寸和重量 DIMENSION AND WEIGHT

| | | |
|---------------|----|------|
| 长 Length (L) | mm | 2500 |
| 宽 Width (W) | mm | 1075 |
| 高 Height (H) | mm | 1335 |
| 干重 Dry weight | kg | 1550 |

环境条件 AMBIENT CONDITIONS

| | | |
|--------------------------|----|-------|
| 环境温度 Ambient Temperature | °C | ≤40 |
| 相对湿度 Ambient Humidity | % | ≤60 |
| 海拔高度 Altitude | m | ≤1000 |

执行标准 APPLICABLE STANDARDS

ISO8528 ISO3046 IEC60034 IEC34
BS5000PT99 BS5514 GB2820 GB755

柴油发电机组标准配置 STANDARD SUPPLY SCOPE

- 柴油发电机组，由康明斯柴油发动机、同步无刷交流发电机、50°C环境温度散热水箱、机组控制屏（科迈智能型控制器）及充电机、钢结构底座及内置减震器组装而成
Diesel engine generator, assembled with Cummins diesel engine, Brushless AC alternator, 50°C radiator, ComAp control module, battery charger and Steel common base and isolators
- 机组输出柜（三极断路器） Power output circuit breaker, 3 pole
- 电池组及连接线 Float charger and batteries
- 工业型消声器，排烟弯头，波纹管及配套法兰 Industrial silencer and accessories
- 随机专用工具 Routine maintenance tools
- 随机资料 A full set of operation and maintenance manuals and control schematics
塑膜包装 Plastic film packing

备注 REMARKS

- 机组过载能力，每连续运行 12 小时中允许累计 1 小时超载不大于 10%。
Overload capacity: 10% is available for 1 hour every 12 hours
- 每台机组都通过负载 0%、25%、50%、75%、100% 以及静态、动态各项响应能力的测试，所有保护装置和控制系统在出厂之前都经过严格检测合格。
Performance load test 0%, 25%, 50%, 75% up to 100% and all protection and control functions conducted for each generator set.



发动机 DIESEL ENGINE

| 制造商 MAKE: 康明斯 CUMMINS | | 型号 MODEL: 6CTAA8.3-G2 |
|--|--------|-------------------------------------|
| 发动机净功率 Engine Power Net | kW | 183 (主用 PRP) 203 (备用 LTP) |
| 结构形式 No. of Cylinders and Alignment | | 6 Cylinder 缸, L,涡轮增压 Turbo-charged |
| 压缩比 Compression Ratio | | 18.0:1 |
| 燃烧方式 Combustion | | 直喷式 Direct compress fired |
| 缸径/冲程 Bore/Stroke | mm | 114/135 |
| 总排量 Displacement | L | 8.3 |
| 燃油类型 Fuel | | 轻柴油 Light diesel |
| 燃油消耗率 Fuel Consumption (100%) | g/kWh | 205 g/kWh (45 L/h) |
| 机油消耗率 Oil Consumption | g/kWh | 燃油消耗的 0.5% 0.5% of fuel consumption |
| 调速方式 Governing Type | | 电调 Electronic |
| 冷却方式 Cooling System | | 闭式水循环空气冷却 Closed water circulation |
| 总冷却液用量 Total Coolant Capacity | L | 35 |
| 润滑油总用量 Total Lubrication System Capacity | L | 28 |
| 润滑油型号 Oil Type | | API CH-4 15W-40 |
| 燃烧进气流量 Combustion Air Flow | L/sec. | 183 (主用 PRP) 191 (备用 LTP) |
| 排气流量 Exhaust Gas Flow | L/sec. | 480 (主用 PRP) 547 (备用 LTP) |
| 排气温度 Exhaust Temperature | °C | 510 (主用 PRP) 580 (备用 LTP) |
| 排气背压 Exhaust Back Pressure | kPa | 10 |
| 冷却风扇空气流量 Cooling Fan Air Flow | m3/min | 420 |
| 启动方式 Starting System | | 24V DC 电启动 Electric |

交流发电机 AC ALTERNATOR

| 制造商 MAKE: 德科 EVOTEC | | 型号 MODEL: TCU288D |
|----------------------------------|-----|-------------------|
| 额定功率 Rated Power | kW | 161 |
| 额定电压 Rated Voltage | V | 400 |
| 额定环境温度 Rated Ambient Temperature | °C | 40 |
| 外壳防护 Ingress Protection Rating | | IP21 / IP23 |
| 绝缘等级 Insulation Class | | H |
| 励磁方式 Excitation System | | 无刷 Brushless |
| 调压器 Voltage Regulation Model | | ETC-1 |
| 短路电流能力 Short Circuit Capacity | | 300%In:10s |
| 绕组节距 Winding Pitch Code | | 2/3 |
| 波形畸变率 Wave Distortion | THB | <5.0% |
| 电话谐波因数 Wave Form IEC | THF | <2% |
| 电话干扰因数 Wave Form NEMA | TIF | <50 |



控制及配电系统 CONTROL AND POWER SYSTEM

标准机组控制屏功能 Standard Control Functions

- 标准型机组控制屏满足机组正常操作，选择 MRS 系列控制器，具备手动和遥控启动（ATS 控制）功能；维护、手动、自动工作模式选择。

Standard control panel meets all the normal applications. MRS control module designed for both manual and auto startup (ATS function), and available maintenance, MAN and AUTO modes.

- LCD 液晶显示柴油机的各项参数、报警；柴油发电机组过压/欠压、低频/高频、低油压、高水温、急停、蓄电池过压/欠压、过电流/短路故障等保护功能；提供历史状态记录。

LCD monitor to show all the operating parameters and provide alarm functions. Protection functions include over-voltage and under-voltage, over-frequency and under-frequency, low oil pressure, high coolant temperature, emergency stop, battery over-voltage and under-voltage, over-current and under-current, and historic alarm records.

- 选配 RS232 及 RS485 通信接口实现监控功能, MODBUS 协议。MRS25 可带基于云技术的检测和控制。

RS232 and RS485 communication interface are optional. Cloud technology is available for MRS25 module for special requirements.



MRS 系列控制器
MRS Series Controller

全自动机组控制屏功能 Automatic Control Functions

- 全自动机组控制屏满足无人值守操作功能,选择 AMF 系列控制器，具备手动和市电失电自动启动（监测市电）功能；维护、手动、自动工作模式选择。

Fully automatic control system meets unattended operation. AMF controller has the functions of MAN and automatic startup upon mains failure, and available maintenance, MAN and AUTO modes.

- 具备标准机组控制屏所有控制、报警、显示功能。

All the control, alarm and display functions for the standard controller are available.

- 通过标准 RS232 或 RS485 通信接口实现监控功能, MODBUS 协议。AMF25 可带基于云技术的检测和控制。

RS232 and RS485 communication interface are optional. Cloud technology is available for MRS25 module for special requirements. MODBUS communication protocol provided.



AMF 系列控制器
AMF Series Controller

全自动并机控制屏功能 Automatic Parallel Control Panel

- 全自动并机控制屏通过采集发电机组各项参数，通过机组间 CAN 通讯实现多台机组同步、自动合闸并机功能，系统最多可同时管理 16 台发电机组并网运行；自动负载分配，负载管理功能。

The automatic parallel control panel is able to collect all the operating parameters to achieve synchronous conditions and parallel operations among the generators via CAN communication.

- 具备标准机组控制屏所有控制、报警、显示功能。

All the control, alarm and display functions for the standard controller are available.

- 通过标准 RS232 或 RS485 通信接口实现监控功能, MODBUS 协议。

RS232 and RS485 communication interface are optional. Modbus communication protocol provided.



AGC 系列控制器
AGC Series Controller

机组输出柜 Power Output Panel

- 安装在机组底座上，标准机组出线开关不带电动机构；全自动控制机组出线开关带电动机构。

Mounted onto the common base while the standard circuit breaker equipped without motorized control.

- 可选配其他电气保护功能，如差动保护。

Other protection functions such as differential protection can be optional.



可选附件 OPTIONALS

排气系统 EXHAUST SYSTEM

- 住宅型消音器 Residential Silencer
- 排气管 Exhaust gas pipe

预热系统 PRE-HEATING SYSTEM

- 水套预热器 Coolant heater
- 机油预热器 Oil heater
- 发电机空间加热器 Alternator Space heater
- 燃油加热器 Fuel heater
- 箱体空间加热器 Enclosure Space heater

燃料系统 FUEL SYSTEM

- 自动补油泵 AUTO fuel pump
- 手动补油泵 MAN fuel pump
- 油位指示 Fuel level indication
- 底座油箱 Base fuel tank
- 日用油箱 Separate fuel tank
- 油箱高/低液位信号 H/L fuel alarm

箱式机组 CANOPY GENERATOR

- 防雨型机组 Weather proof canopy
- 静音型机组 Sound proof enclosure
- 挂车型机组 Trailer type generator

电站 POWER STATION

- 并机控制 Synchronizing Panel
- PLC 总控系统 PLC Master Panel
- 燃油储罐 Bulk Fuel Tank
- 非标设计 Engineering designs

冷却系统 COOLING SYSTEM

- 热交换器 Heater exchanger
- 远置冷却水箱 Remote radiator
- 冷却塔 Cooling tower

电气系统 ELECTRICAL SYSTEM

- 外置快速充电器 Separate battery charger
- 免维护蓄电池 Maintenance-free batteries
- 动力电缆 Power cable
- 多芯信号电缆 Multi-core signal cable
- 远程显示盘 Remote Repeater Panel
- 启动切换柜 ATS Auto Changer-over Panel
- 4 极断路器 Circuit Breaker, 4P

备用备件 SPARE PARTS

- 机油滤清器 Oil filter
- 柴油滤清器 Fuel filter
- 空气滤清器 Air filter
- 易损备件 Capital Parts

维护 MAINTENANCE

- 维护工具 Maintenance tool

其它 OTHERS

- 第三方认证 Certifications
- 附件报警及停机 Add alarms and shutdowns
- _____
- _____
- _____

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