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# 项目背景和目标 Project background and objective

# 技术要求Engineering requirements

* 喷油器关键参数Injector key parameter

|  |  |
| --- | --- |
| 发动机型号Engine model | YN25 |
| 型号Type | CRIN-T4 |
| 喷射压力Injection pressure | 1800bar |
| 最小喷射间隔Min. Injection interval | 400us |
| 每循环最大喷射次数  No. of injection /cycle | 5 |
| 喷孔直径Injection hole diameter | Φ0.0161mm |
| 喷孔数量No. of injection hole | 6 |
| 寿命Lifetime | B10 @ 10000h |

* ECU关键参数ECU key parameter

|  |  |  |  |
| --- | --- | --- | --- |
| 发动机型号Engine model | | | YN38CR |
| 型号Type | | | MDD-01C |
| 排放要求Emission level | | | CN3 |
| 针脚Pins | | | 121 |
| 防护等级Protect class | | |  |
| IP6K9K(with header) |
| 工作电压Operating voltage | | | 12V/24V |
| 输入信号 | 模拟信号Analogue inputs | | 16 |
| Inputs | 频率信号Frequency inputs | | 3 |
|  | 数字信号Digital inputs | | 17 |
|  |  | |  |
| 输出信号Outputs | H桥控制H Bridge | | 1 |
| 低端控制 | PWM | 8 |
| Low side driver | ON/OFF | 10+1(主继电器) |
| 高边控制High Side Output | | 1 |
| 喷油器控制 | | 2 banks \* 3 injectors |
| Injector driver | |
| 通讯Communication | | | 2 CAN |
| 1 Lin |

ECU功能和I/O接口 ECU function and I/O

|  |  |  |  |
| --- | --- | --- | --- |
| **MDD-01C 接口功能清单** | | | |
| **序号** | **针脚缩写** | **功能定义说明** | **通道** |
| K01 | V\_V\_BAT | 蓄电池正极 | Battery+ |
| K02 | G\_G\_GND | 蓄电池地 | Battery- |
| K03 | I\_S\_LOGIC/T15 | T15启动开关 | DI |
| K04 | V\_V\_BAT | 蓄电池正极 | Battery+ |
| K05 | G\_G\_GND | 蓄电池地 | Battery- |
| K06 | I\_S\_START/T50 | T50启动电机开关 | DI |
| K07 | I\_S\_CRCPOS | 巡航加速 | DI |
| K08 | I\_S\_ACPR | 空调压力开关 | DI |
| K09 | NC. | NC. | N/A |
| K10 | I\_S\_WFS | 油水分离开关 | DI |
| K11 | I\_S\_CRCNEG | 巡航减速 | DI |
| K12 | I\_S\_Reserve01 | 排气制动开关 | DI |
| K13 | I\_S\_DIAG | 诊断请求开关 | DI |
| K14 | I\_S\_Reserve02 | 预留 - 开关输入2 | DI |
| K15 | I\_F\_VSS | 车速传感器信号 | FI |
| K16 | B\_D\_CAN1L | CAN总线1接口1低端 | CAN |
| K17 | B\_D\_CAN1H | CAN总线1接口1高端 | CAN |
| K18 | G\_G\_GND | CAN总线1接口1屏蔽地 | GND |
| K19 | NC. | NC. | N/A |
| K20 | B\_D\_KLINE | K线接口 | K线 |
| K21 | O\_S\_OBD | OBD故障指示灯 | LSD |
| K22 | O\_S\_EXHSTBRKLP | 排气制动指示灯 | LSD |
| K23 | O\_T\_EXHSTBRK | 排气制动阀 | LSP |
| K24 | O\_S\_MRLY | 主继电器 | LSD |
| K25 | I\_S\_CLUTCH | 离合器开关 | DI |
| K26 | I\_S\_CRCRES | 巡航复位 | DI |
| K27 | I\_S\_BREAK | 制动开关 | DI |
| K28 | I\_S\_CRCOFF | 巡航开关 | DI |
| K29 | I\_S\_EXHSTBR | 远程油门使能开关 | DI |
| K30 | I\_S\_CES | 恒定转速开关 | DI |
| K31 | I\_S\_AC | 空调请求开关 | DI |
| K32 | I\_R\_OTS | 预留 - 机油温度传感器 | AI |
| K33 | I\_S\_BRKRED | 制动冗余开关 | DI |
| K34 | G\_R\_VSS | 车速传感器地 | GND |
| K35 | I\_A\_RMTAPP1 | 预留 - 远程加速踏板位置传感器1 | AI |
| K36 | G\_G\_GND | CAN总线2接口2屏蔽地 | GND |
| K37 | B\_D\_CAN2L | CAN总线2接口2低端 | CAN |
| K38 | B\_D\_CAN2H | CAN总线2接口2高端 | CAN |
| K39 | O\_F\_ENGN | 发动机转速信号输出 | LSP |
| K40 | O\_S\_ERRLGT | 发动机故障指示灯 | LSD |
| K41 | O\_S\_GLWLP | 预热指示灯 | LSD |
| K42 | O\_T\_DCPOS | EGR阀电机高端 | H-bridge |
| K43 | O\_T\_DCNEG | EGR阀电机低端 | H-bridge |
| K44 | I\_A\_OPS | 机油压力传感器信号 | AI |
| K45 | I\_A\_POCDIF | POC压差传感器信号 | AI |
| K46 | I\_R\_ETS | 环境温度传感器信号 | AI |
| K47 | I\_A\_PTO | PTO多态开关信号 | AI |
| K48 | I\_A\_APP1 | 加速踏板位置信号1 | AI |
| K49 | I\_A\_APP2 | 加速踏板位置信号2 | AI |
| K50 | V\_V\_5V1 | 加速踏板传感器1-供电 | 5V |
| K51 | V\_V\_5V3 | 机油压力传感器供电 | 5V |
| K52 | I\_A\_RMTAPP2 | 预留 - 远程加速踏板位置传感器2 | AI |
| K53 | O\_S\_A | 空调压缩继电器 | LSD |
| K54 | O\_S\_WFLGT | 油水分离器指示灯 /滤清器储水过多报警指示灯 | LSD |
| K55 | NC. | NC. | N/A |
| K56 | NC. | NC. | N/A |
| K57 | O\_Ｔ\_FANL | 冷却低速风扇继电器 | LSP |
| K58 | NC. | NC. | N/A |
| K59 | O\_S\_GLWRLY | 进气预热控制输出继电器 | LSD |
| K60 | NC. | NC. | N/A |
| K61 | NC. | NC. | N/A |
| K62 | O\_T\_VNT | VNT阀（易控） | LSP |
| K63 | G\_G\_AGND | 机油压力传感器地 | GND |
| K64 | G\_G\_GND | POC压差传感器地 | GND |
| K65 | G\_G\_AGND | 环境温度传感器地 | GND |
| K66 | G\_G\_AGND | PTO多态开关地 | GND |
| K67 | G\_G\_AGND | 加速踏板传感器1-地 | GND |
| K68 | G\_G\_AGND | 加速踏板传感器2-地 | GND |
| K69 | NC. | NC. | N/A |
| K70 | V\_V\_5V3 | POC压差传感器-供电 | 5V |
| K71 | V\_V\_5V2 | 加速踏板传感器2-供电 | 5V |
| K72 | O\_S\_FANH | 冷却高速风扇继电器 | LSD |
| K73 | O\_S\_STRT | 启动电机继电器 | LSD |
| K74 | O\_S\_FLHT | 燃油加热继电器 | LSD |
| K75 | O\_T\_ClntDsp | 预留 - 水温指示信号输出 | LSD |
| K76 | O\_F\_V | 预留 - 车速信号输出 | LSP |
| K77 | NC. | NC. | N/A |
| K78 | NC. | NC. | N/A |
| K79 | NC. | NC. | N/A |
| K80 | O\_V\_RH | 预留 | HSD |
| K81 | O\_V\_RH | 预留 | HSD |
| K82 | O\_T\_VCV | 燃油计量阀 | LSP |
| K83 | NC. | NC. | N/A |
| K84 | V\_A\_5V2 | 增压器压力温度传感器-供电 | 5V |
| K85 | I\_A\_Reserve | 预留 | AI |
| K86 | V\_V\_5V1 | EGR位置反馈传感器供电 | 5V |
| K87 | G\_G\_GND | EGR位置反馈传感器地 | GND |
| K88 | G\_G\_AGND | 轨压传感器地 | GND |
| K89 | NC. | NC. | N/A |
| K90 | O\_T\_EGR | EGR气动阀 | LSP |
| K91 | NC. | NC. | N/A |
| K92 | V\_V\_5VCAM | 凸轮轴转速传感器供电 | 5V |
| K93 | V\_V\_5V2 | 曲轴转速传感器供电 | 5V |
| K94 | V\_A\_5V1 | 轨压传感器-供电 | 5V |
| K95 | G\_G\_AGND | 燃油温度传感器地 | GND |
| K96 | G\_G\_AGND | 冷却液温度传感器地 | GND |
| K97 | G\_G\_AGND | 增压器压力温度传感器地 | GND |
| K98 | I\_F\_CRSPOS | 曲轴转速信号+ | FI |
| K99 | I\_F\_CRSNEG | 曲轴转速信号- | FI |
| K100 | G\_R\_CAS | 磁电式接地 | GND |
| K101 | I\_F\_IATS | 空气流量传感器温度信号 | FI |
| K102 | G\_G\_AGND | 空气流量传感器地 | GND |
| K103 | I\_A\_EGRPOS | EGR位置反馈传感器信号 | AI |
| K104 | I\_R\_CTS | 冷却液温度传感器信号 | AI |
| K105 | I\_R\_FTS | 燃油温度传感器信号 | AI |
| K106 | I\_F\_CAM | 凸轮轴转速信号 | FI |
| K107 | G\_R\_CAS | 凸轮轴转速传感器-地 | GND |
| K108 | G\_G\_GND | 磁电式接地 | GND |
| K109 | I\_F\_IAMS | 空气流量传感器流量信号 | FI |
| K110 | V\_V\_12V | 预留 - 空气流量传感器供电 | 12V |
| K111 | I\_R\_IATS | 增压器压力温度传感器 温度信号 | AI |
| K112 | I\_R\_BPS | 增压器压力温度传感器 压力信号 | AI |
| K113 | I\_A\_RAILPS | 轨压传感器信号 | AI |
| K114 | O\_P\_CYL6 | 喷油器6-低 | Injector |
| K115 | O\_P\_COM2 | 喷油器Bank2-高 | Injector |
| K116 | O\_P\_COM1 | 喷油器Bank1-高 | Injector |
| K117 | O\_P\_CYL4 | 喷油器4-低 | Injector |
| K118 | O\_P\_CYL1 | 喷油器1-低 | Injector |
| K119 | O\_P\_CYL5 | 喷油器5-低 | Injector |
| K120 | O\_P\_CYL3 | 喷油器3-低 | Injector |
| K121 | O\_P\_CYL2 | 喷油器2-低 | Injector |

* 1. 环境可靠性标准执行： ISO\_16750 -3/4
  2. 电性能标准执行： ISO\_16750 – 2 : 2010/2006
  3. 电磁兼容性标准执行： ISO\_11452-2\_2004

ISO 11452-4:2011

CISPR 25 Ed.3

ISO 7637-2:2004 A1:2008

ISO 7637-3:2007

ISO 10605:2008

* 1. 组件/系统正常运转的其它要求：无

## 法规要求Regulatory requirements

## 制造要求Manufacturing Requirements

## 装配要求（布局设计边界条件）Assembly requirements (layout design boundary condition)

# 进度计划 Project milestones

# 工作内容及交付物Working Description and Deliverable

# 评审及验收Review & Acceptance

根据甲方的项目时间节点计划，进行设计评审及验收，形成评审报告，验收通过后由甲方出具相应的验收证明；

The assessment and approval of Goods shall be in line with the project milestones provided by Party A and Party A will provide acceptance certificate when the goods has passed the assessment.

* 1. 乙方提供给甲方的所有样件功能应满足双方确认的产品技术规范并随样件提交自检报告；

All functions of goods provided by Party B shall satisfy the requirements set forth in the Goods Technology Standards confirmed by both Parties and Party B shall provide self-inspection report.

* 1. 乙方提供给甲方的所有样件尺寸及公差应满足双方确认的图纸要求并随样件提交自检报告；

All dimension and tolerance of samples provided by Party B shall satisfy the drawings confirmed by both Parties and Party B shall provide self-inspection report together with samples.

* 1. 材料检测 Material test
     + 乙方按照甲方相应材料的企业标准进行材料检测，乙方选定的材料检测机构必须经过甲方认可，检测合格后提供材料试验原始报告及材料样条、样块给甲方；

Party B test material t according to party A standards , the test agency must be confirmed by party A, after detected qualified provided original test report and material specimens to party A;

* + - 甲方对乙方提供的材料样条、样块进行材料试验，试验合格后，甲方对乙方材料进行认可；

Party A test the material specimens provided by party B ,verify the material when the result fulfill the party A standard requirement;

* + - 满足国内外报废汽车回收相关法规标准（报废汽车指令2000/53/EC和车辆再使用、再利用和再回收利用型式认证指令2005/64/EC ）和化学品注册、评估、授权和限制法规（REACH,1907/2006/EC）要求；

Satisfy relational end-of vehicles and reusability (2000/53/EC), recyclability and recoverability (2005/64/EC) and evaluation authorization and restriction of chemical (REACH,1907/2006/EC) requirement;

* 1. 乙方按照双方确认的ADVP&R及试验操作指导书中的要求进行试验，并提供性能试验原始报告给甲方，乙方选定的试验室必须经过甲方认可；

Party B shall test the Goods in light of the document titled DVP and test operation manual confirmed by both Parties, and provide the report to Party A.

* 1. 加工方法 Machine process
     + 按乙方的工艺流程图（需经甲方认可）执行，由乙方负责加工并装配成总成供货，满足产品质量要求；

Perform according to party B process flow diagram confirmed by party A , party B machine and assemble , provide the components fulfill the qualification requirements ;

* + - 乙方按工艺需要采用大批量加工方式，甲方认可后，乙方方可进入批量生产阶段；未经甲方许可，乙方不得单方擅自变更产品型号、材料牌号及来源、加工工艺、供应商等涉及到产品设计方面的内容；

Party B manufacture products as volume produce model with party A confirmed；party B cannot change the production type, material mark and source, machining process, suppliers refer to the design aspect without the permission of party A.

* 1. 更改通知 Change notification

任何设计或材料的更改必须告知云内

Any change/modification in design or material must be done with prior approval of YUNNEI.

* 1. 2D/3D数据要求2D/3D data requirement

2D/3D数据在最初的互动交流中必须共享

2D and 3D data are required which must be shared during initial interactions.

* 1. 供货范围Scope of supply
     + 燃油系统需要防尘包装，以保证清洁度。

FIE system need dustproof packaging so as to ensure cleanliness

* + - 燃油系统零部件供货。

Parts supply for FIE system

* 1. 适用性细节Serviceability details

燃油系统在发动机上拆装方便。

Ease of removal and installation of FIE system from engine.

* 1. DVP复审计划DVP review Plan

根据双方约定，按计划节点复审。

DVP review Plan will check based on both Parties negotiation

* 1. 保修细节Warranty Details

3年8万公里3years or 80,000km

# 权利义务Rights and Obligation

* 1. 乙方应建立有效的项目开发团队，提供团队成员名单包括人员角色、职能职责及工作经验，并经甲方确认。如有人员变动，必须提供同等资历人员支持，新加入团队成员须经甲方确认，保证有足够的人力资源来支持本项目开发。

Party B shall establish an effective project development team and Party B is required to provide the list of team member to Party A including the position, professional capability and working experiences of each member, which shall be confirmed by Party A. If any change of team members, the replacement shall be qualified with the same professional capability and new replacement shall be confirmed by Party A. Party B shall make sure that it has enough HR resource to maintain the development team.

* 1. 从产品设计到制造过程中，关于产品设计或技术标准的变更，乙方均需要提前通知甲方，变更必须经过甲方正式批准后实施。

From the stages of design to production, upon occurrences of any changes of Goods in respect of design and technology of Goods, Party B shall notify Party A in advance, and after approval of Party A, Party B would be allowed to carry out the changes.

* 1. 乙方严格按照甲方开发计划进行产品开发，如因乙方原因不能按时完成，应提前书面通知甲方，在甲方书面同意后，方能变更产品开发计划。

Party B shall carry out the development plan of Party A in a strictly manner. If Party B fails to complete the tasks on time, Party B shall notify Party A in advance. After obtaining approval in writing from Party A, any change of project plan can be executed.

* 1. 在产品开发过程中，乙方应及时向甲方反馈开发情况信息。

During the development of Goods, Party B shall promptly feedback the status of development of Goods.

* 1. 乙方应与甲方共同研究并解决生产过程中及市场反馈的技术质量问题。

Party B and Party A shall jointly solve the quality issues occurred from the production and sales market.

* 1. 下述问题，乙方应提前通报甲方：

Regarding the following issues, Party B shall notify Party A in advance.

* + - 请求设计修改；Request for change of design;
    - 请求瑕疵部件使用；Request for use of defective goods;
    - 请求过程修改；Request for changes of process;

# 联系人Contact Information

本零部件开发过程中双方系统工程师、项目负责人见下表

Contact information of both parties shall refer to the following sheet

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 项目负责人及联系方式  Contact Information of Project Manager | | | 系统工程师及联系方式  Contact Information of Engineer | | |
|  | 姓名  Name | 电话  Telephone | 邮箱地址  Email Address | 姓名  Name | 电话  Telephone | 邮箱地址  Email Address |
| 甲方  Party A |  |  |  |  |  |  |
| 乙方  Party B |  |  |  |  |  |  |

# 其他 Others

* 1. 本协议未尽事宜，甲乙双方协商解决；

With regard to matters not covered hereof, Party A and Party B shall negotiate friendly.

* 1. 本协议作为开发合同，合同签字盖章后生效；

This Agreement, as the appendix of development contract, will be effective after contract signature by both Parties.

# 附件1: Appendix 1

德尔福联系人清单 List of contact persons of Delphi team

|  |  |  |  |
| --- | --- | --- | --- |
| 职责  Resp. | 姓名  Name | 邮箱  e-Mail | 电话  Tel |
| 项目经理  Project Manager |  |  |  |
| 技术及标定经理  Technical and System calibration Manager |  |  |  |

# 附件2: Appendix 2

德尔福试验要求 Delphi Engine& Vehicle Validation Requirements

|  |  |  |
| --- | --- | --- |
|  | 发动机/整车 Engine/Vehicle | 项目  Item |
| 发动机  Engine | 发动机1 E1 | 性能和排放 performance and emission |
| 发动机2 E2 | DPF/SCR台架 DPF/SCR on engine test bench |
| 发动机3 备用1 | 性能和排放 performance and emission |
| 发动机4 备用2 | DPF/SCR台架 DPF/SCR on engine test bench |
| 整车试验  Vehicle validation | 整车1 V1 | 燃油系统标定，DPF/SCR标定  FIE system calibration, DPF/SCR calibration |
| 整车2 V2 | 驾驶性/空气管理标定  driving and air management calibration |
| 整车3 V3 | 备用 |

# 附件3: Appendix 3

各零部件刻印标识 Parts name plate

(德尔福提供，并取得双方共同协商 Provide from Delphi，mutual agreement)

# 附件4: Appendix 4

《针对云内D40&D45国六发动机的共轨系统技术方案》

MDCR System Technical Offer For YUNNEI D40&D45 CN6 Engine