

产品销售全球
PRODUCT SALES WORLDWIDE



镇江液压股份有限公司
ZHENJIANG HYDRAULICS CO.,LTD.

地址:镇江市南徐大道300号
电话: (0511) 85624802 85619391
邮编: 212021
网址: //www.zjyyj.com
邮箱: zy-js@zjyyj.com
版本: 2025.8

Zhenjiang Hydraulics Co.,Ltd.
Address: 300 Nanxu Avenue,Zhenjiang,Jiangsu,China
Tel: (86511) 85624802 85619391
Post code: 212021
Http: //www.zjyyj.com
E-mail: zy-js@zjyyj.com
Version: 2025.8



镇江液压股份有限公司

ZHENJIANG HYDRAULICS CO.,LTD.



40⁺年 专注全液压转向器和摆线液压马达

SPECIALIZING IN HYDRAULIC STEERING UNIT AND ORBITAL MOTOR FOR MORE THAN 40 YEARS

电控全液压转向器系列

ELECTRO-HYDRAULIC STEERING UNIT SERIES





关于我们 ►► ABOUT US

全液压转向器和摆线马达专家 Hydraulic steering unit and orbital motor expert

镇江液压股份有限公司成立于 1976 年，专业化研发与制造全液压转向器及配套阀类产品，镇江大力液压马达股份有限公司长期致力于高品质摆线液压马达及其配套产品的研发与制造，广泛为工程机械、工业车辆、农业机械、林业机械、路面机械、矿山机械、塑料机械、船用机械、园林机械等主机配套，畅销全中国，出口全世界。公司经过四十多年的发展，行稳致远，砥砺前行！具有了强大的研发能力，配备了先进的制造设备和检测仪器，打造出的高性能产品竭诚满足客户的需要，为非道路移动车辆全液压转向和机械设备液压扭矩输出提供理想的解决方案。

Zhenjiang Hydraulics Co., Ltd, was established in 1976, specializing in the R&D and manufacture of hydraulic steering unit, accessories valve and related products. Zhenjiang Dali Hydraulic Motor co., LTD., has been continuously devoting to research, development and manufacture of high quality orbital motor and related products. Products are widely used for engineering machinery, industrial vehicles, agricultural machinery, forestry machinery, road machinery, mining machinery, plastic machinery, marine machinery, garden machinery etc. We have good sales and service reputation all over China and the worldwide. The company has a history of more than 40 years development and we've been moving forward steadily. Based on strong R & D ability, advanced manufacturing equipment and testing instruments, we supply high-performance products and ideal solution of hydraulic steering system for off-highway mobile vehicles and mechanical equipment hydraulic torque output to satisfy customers' needs.

电控全液压转向器系列

ELECTRO-HYDRAULIC STEERING UNIT SERIES

- 自动驾驶电控产品..... 3
Autonomous Electro-Hydraulic Steering Products
- 106 电控同步全液压转向器..... 11
106 Electronically Controlled Synchronized Steering Unit
- SWAS 方向盘角度传感器..... 16
SWAS Steering Wheel Angle Sensor

关于产品 ▶▶ 自动驾驶电控产品

AUTONOMOUS ELECTRO-HYDRAULIC STEERING PRODUCTS

121 自动驾驶电控全液压转向器

121 Autonomous Electro-Hydraulic Steering Unit

121 自动驾驶电控全液压转向器高度集成全液压转向器和电控比例阀，并设立方向盘和电控液压转向安全监控系统，产品符合 ISO13849 或 GB/T 16855 安全标准，可实现矿卡、装载机、拖拉机等非道路行走车辆全液压自动驾驶，降低驾驶员工作强度，提供更加安全舒适的工作环境，有效提高生产效率。

121 Autonomous Electro-Hydraulic Steering Unit is highly integrated with a hydraulic steering unit and an electro-proportional valve, and is equipped with a steering wheel and an electro-hydraulic steering safety monitoring system. The product complies with ISO 13849 or GB/T 16855 safety standards. It enables fully hydraulic assisted and autonomous driving for off-road vehicles such as mining trucks, loaders, and tractors, reducing driver workload, providing a safer and more comfortable working environment, and effectively enhancing productivity.

ASV 自动驾驶电控转向阀

ASV Autonomous Electro-Hydraulic Steering Valve

ASV 自动驾驶电控转向阀，区别于 121 自动驾驶电控转向器，属于分体式电控转向阀。适用于无驾驶室自动驾驶系统，可和负荷传感开芯转向器通过油管相连使用，或选择与 121 电控转向器同时安装，组成冗余结构，极大方便主机厂的安装。产品集成电控液压转向安全监控系统，符合 ISO13849 或 GB/T16855 安全标准。

In contrast to the integrated the 121 Autonomous Electro-Hydraulic Steering Unit, the ASV is a modular electro-hydraulic steering valve. Designed for cabinless autonomous driving systems, it can be connected via hydraulic lines to a load-sensing open-center steering unit, or installed alongside the 121 steering unit to form a redundant architecture, significantly simplifying integration for OEMs. The product incorporates an electro-hydraulic steering safety monitoring system and complies with ISO 13849 or GB/T 16855 safety standards.

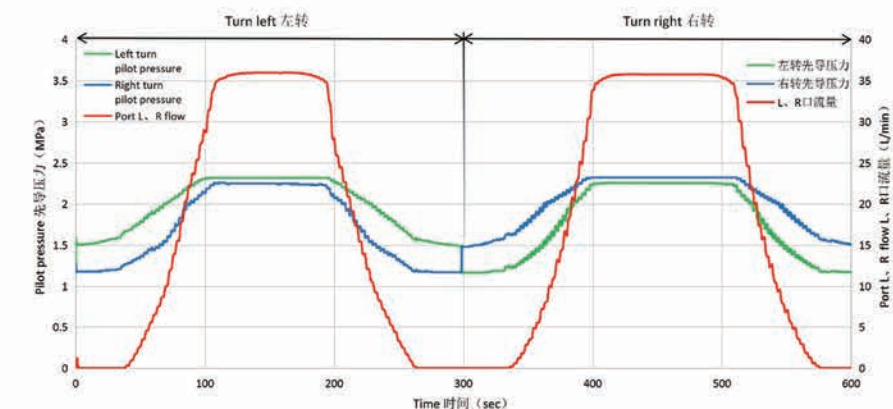
技术特点 Characteristic

- 负荷传感功能 Load sensing function
- 方向盘有反应和无反应功能 Steering wheel has reactive and non-reactive function
- 快速转向功能 Quick turn function
- 人力转向功能 Manual steering function
- 安全监控功能 Security monitoring function
- 方向盘传感器信号接入 Steering wheel sensor signal access
- 轮角传感器信号接入 Wheel Angle sensor signal access
- CAN总线通信 CAN bus communication

应用场景 Application Scenarios



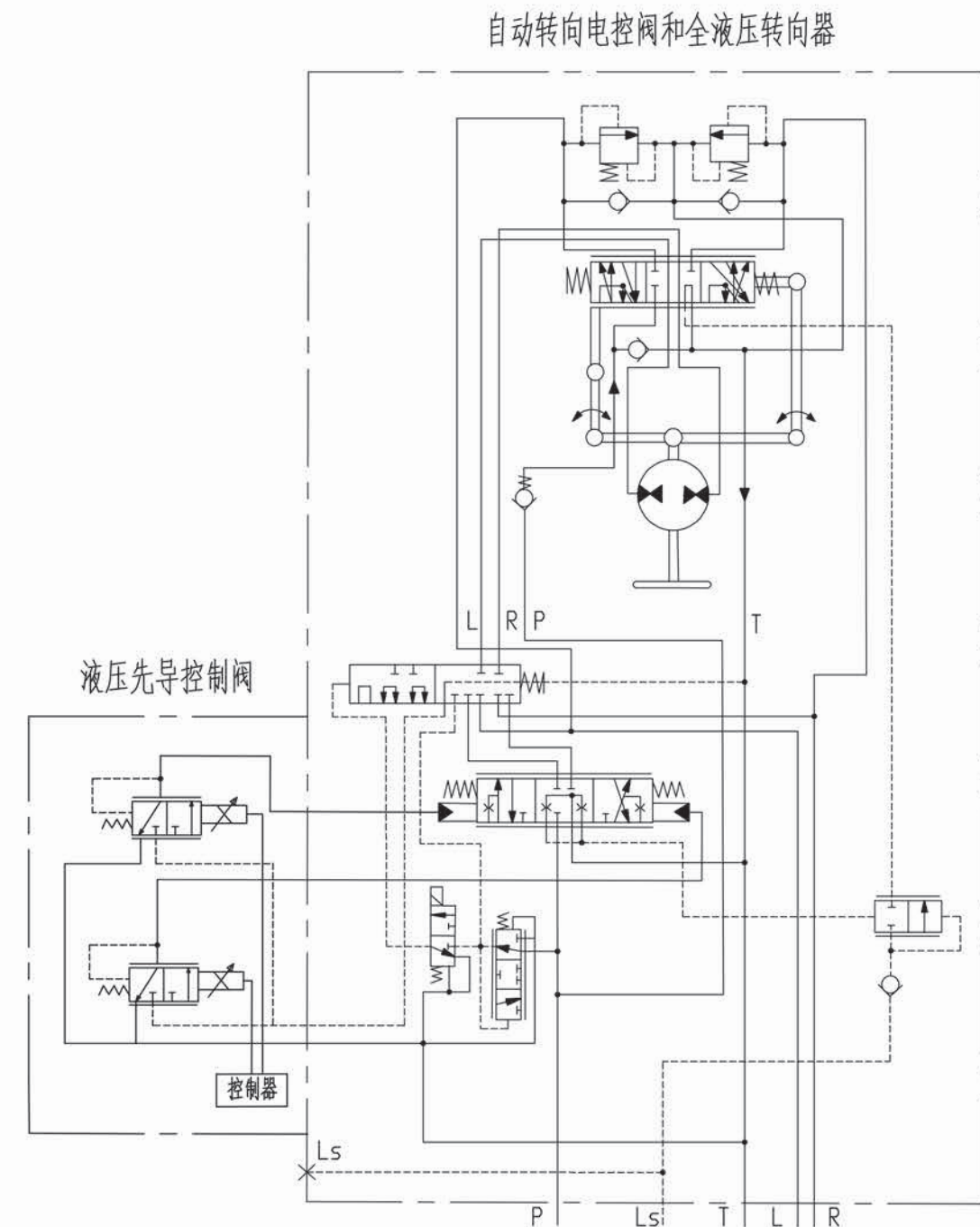
电控性能 Electronic control Performance



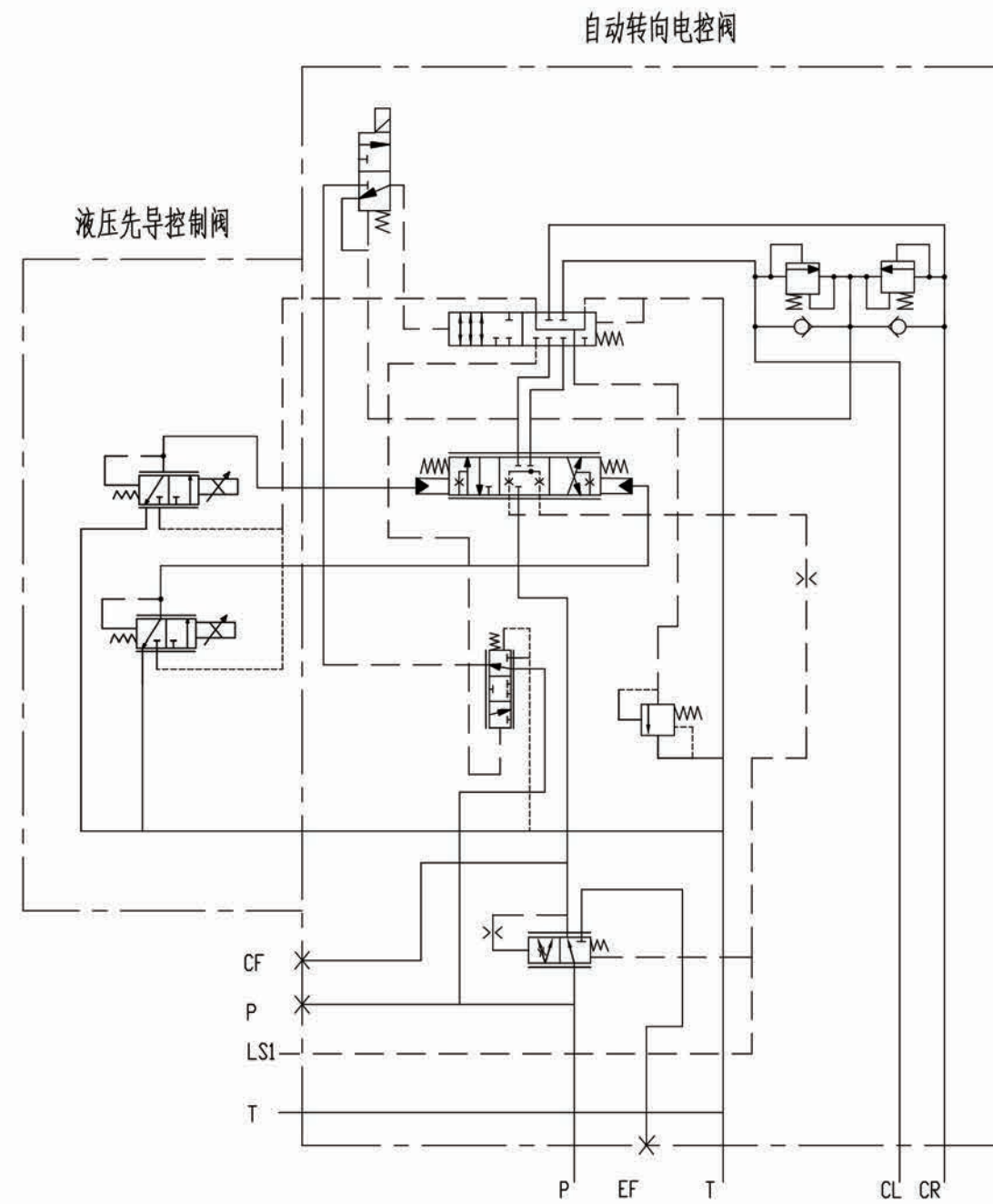
技术参数Technical Specifications

产品 Product		121自动驾驶电控全液压转向器 121 Electro-Hydraulic Steering Unit	ASV自动驾驶电控转向阀 ASV Electro-Hydraulic Steering Valve
液压 Hydraulic parameter	排量Displacement	100-500 mL/r	—
	最高压力Max. pressure	P□ Port P 25 MPa	
		T□ Port T 2.5 MPa	
		L、R□ Port L,R 28MPa	
	最大流量Max. discharge	P□ Port P 90 L/min	
		L、R□ Port L,R 50 L/min	CL、CR□ Port CL,CR 70 L/min
	电控流量 Electronic control flow	20、50 L/min	20、50、70 L/min
	缓冲阀调定压力 The shock valve pressure	16~26 MPa	24~28 MPa
	安全阀调定压力 The relief valve pressure	10~21 MPa	
	转向扭矩 Steering torque	≤3 N · m	—
	电控阀芯位移 Electronic control spool displacement	±4 mm	
	电控阀芯死区 Electric control spool dead zone	±0.8 mm	
	外接优先阀 External priority valve	动态信号Dynamic signal	
		弹簧控制压力0.7 MPa或1.05 MPa Spring controlled pressure 0.7 MPa or 1.05 MPa	
		流量Flow 90 L/min	
	液压工作油温 Hydraulic working oil temperature	30~60℃	
	环境工作温度 Ambient operating temperature	-30~60℃	
	液压油粘度 Hydraulic oil viscosity	40℃ 42~74 mm²/s	
	液压油固体颗粒污染度 Hydraulic oil solid particle pollution degree	-/19/16	
	整体重量 Overall weight	15 kg	12 kg
先导控制最大压力 Pilot control max. pressure	2 MPa		
先导控制流量 Pilot control flow	≤4 L/min		
电气 Electrical parameter	控制器电源 Controller power supply	8-36 VDC	
	控制形式 Control form	PWM 100-200 Hz 控制电流 PWM 100-200Hz Control current	
	先导控制最大电流 Pilot control max. current	750 mA	
	响应时间 Response time	≤50 ms	
	模式切换阀接头 Mode switch valve connector	德驰 DT04-2P 24VDC Deutsch DT04-2P 24VDC	
	控制器接头 Controller connector	德驰 DT04-12PA-B016 24VDC Deutsch DT04-12PA-B016 24VDC	

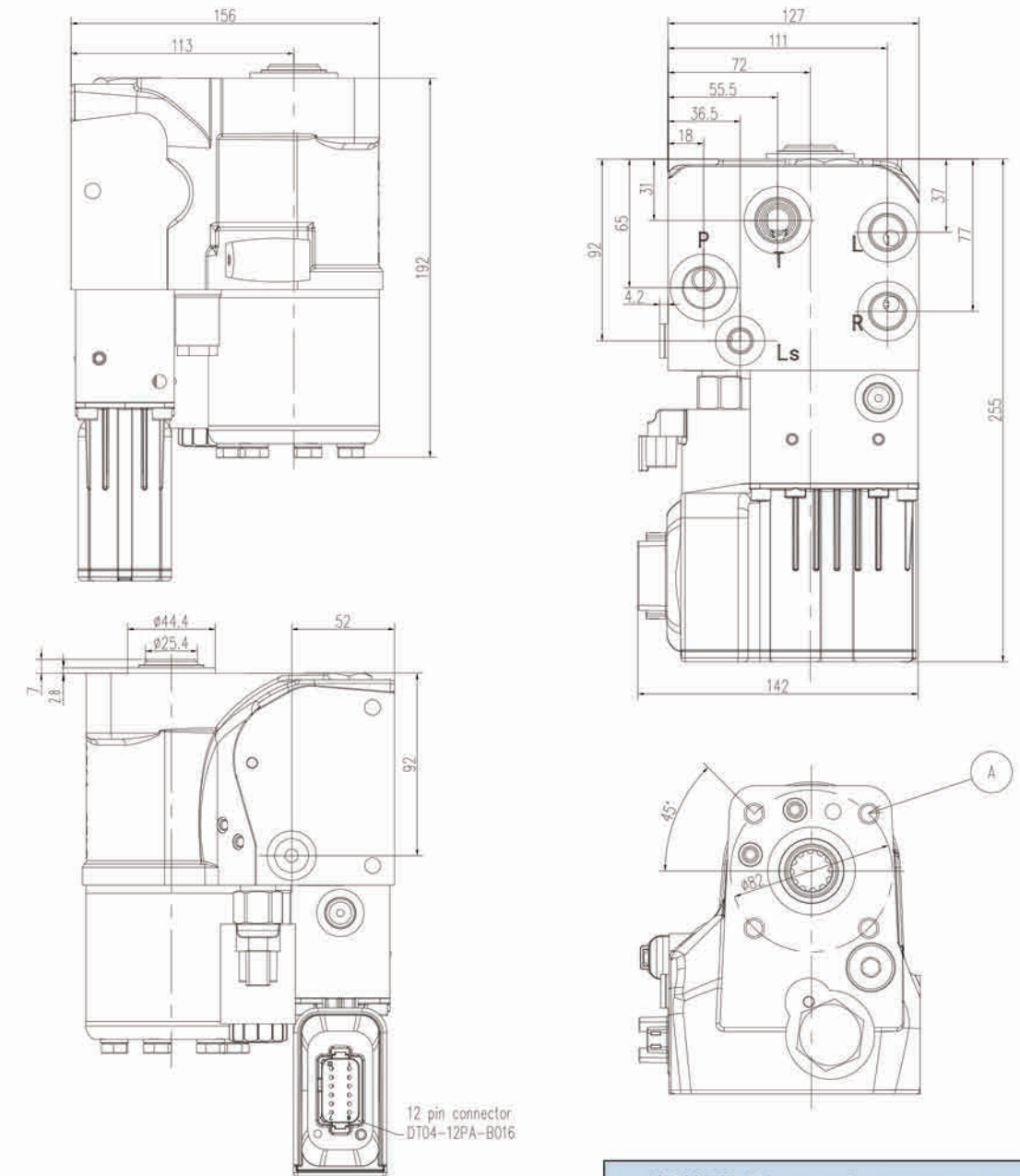
121 液压原理图 Schematic Diagram



ASV液压原理图Schematic Diagram



121外形图Profile



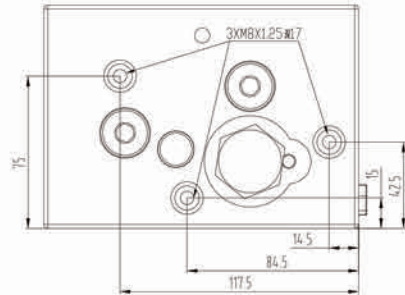
油口螺纹Port Threads

P、T	M22X1.5,15mm deep
L、R	M18X1.5,14.5mm deep
Ls	M12X1.5,11.5mm deep
A	4XM10X1.5,16mm deep

德驰连接器Deutsch Connector

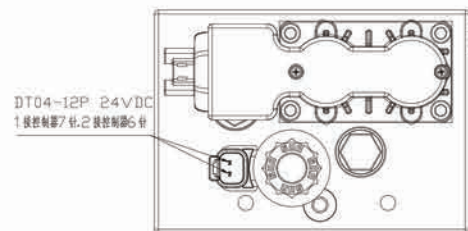
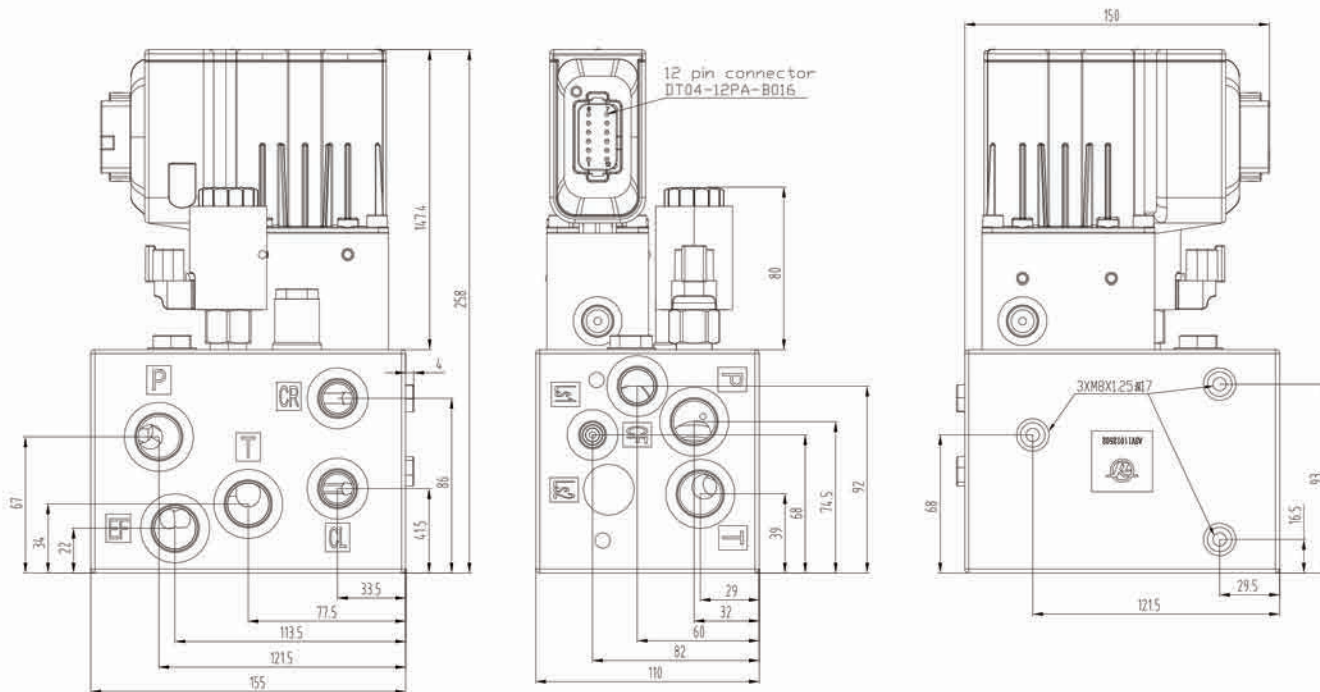
1	AIV2	7	GND
2	AIV3	8	24V
3	Senor_GND	9	CAN-L-Main
4	CAN-H-Safety	10	CAN-H-Main
5	CAN-L-Safety	11	5V
6	Digital output	12	AIV1

ASV外形图Profile



德驰连接器Deutsch Connector

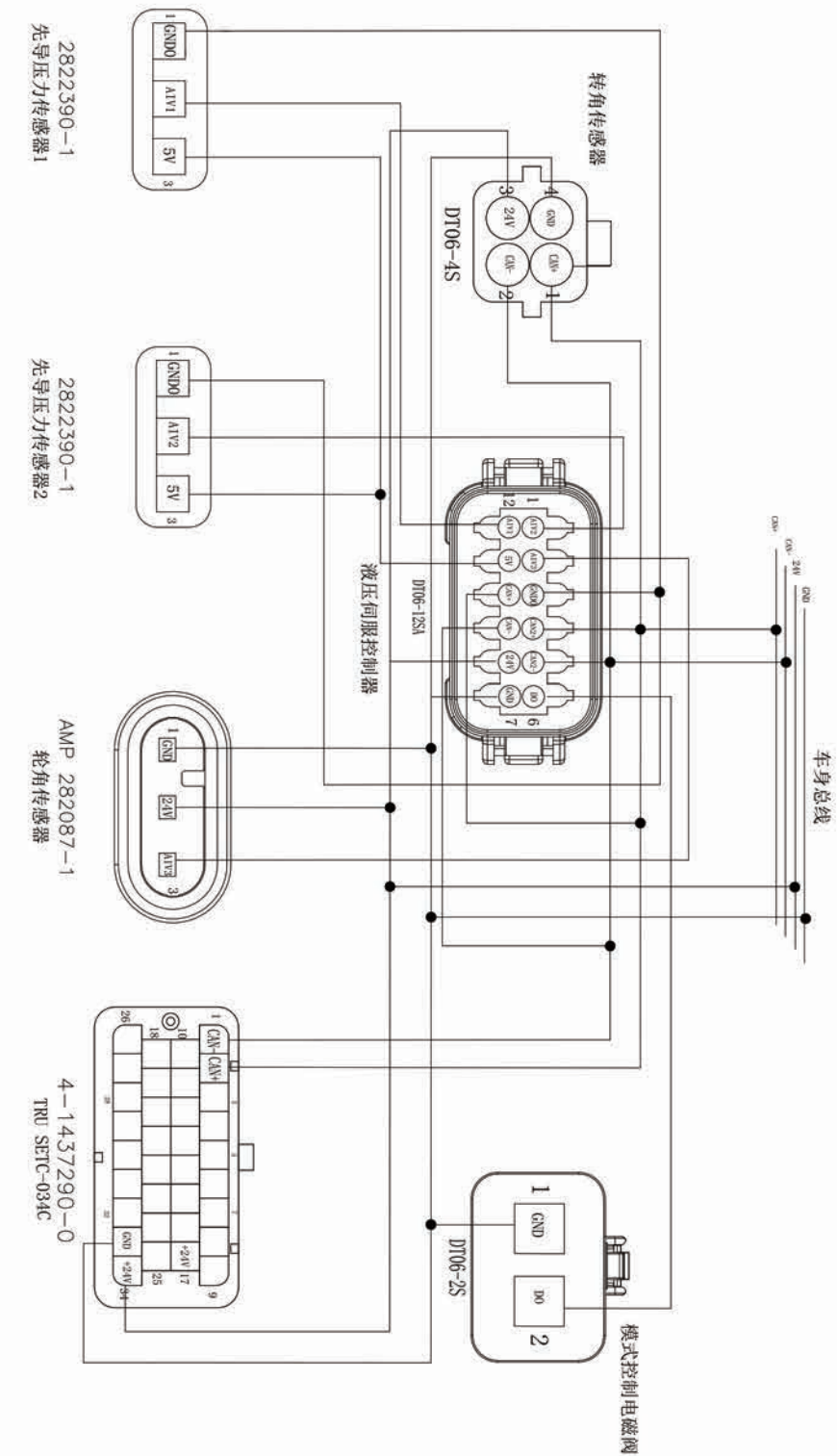
1	AIV2	7	GND
2	AIV3	8	24V
3	Senor_GND	9	CAN-L-Main
4	CAN-H-Safety	10	CAN-H-Main
5	CAN-L-Safety	11	5V
6	Digital output	12	AIV1



油口螺纹Port Threads

P、T、EF	M22X1.5, 15mm deep
CL、CR、CF	M18 x1.5, 14.5mm deep
LS	M12X1.5, 11.5mm deep

接线图Wiring Diagram





关于产品▶▶106电控同步全液压转向器

106 ELECTRICALLY CONTROLLED SYNCHRONIZED HYDRAULIC STEERING UNIT

全液压转向系统是在方向盘与转向机构之间，不需要机械连接的液压动力转向形式。由于液压元件的内泄漏，方向盘与转向轮之间位置关系不是唯一对应关系，方向盘相对于转向轮的转向角度有一定滑移，导致驾驶员不容易记忆方向盘手柄球头位置，转向不便。106 电控同步转向器通过采集转向轮和方向盘转角信号，计算两者之间误差，控制电磁阀对转向液压系统进行补油，实现了方向盘与转向轮精确对应关系，提高了驾驶安全和舒适性，广泛使用在高端叉车全液压转向中。



The hydraulic steering system is a type of hydraulic power steering where no mechanical connection exists between the steering wheel and the steering mechanism. Due to internal leakage in hydraulic components, the positional relationship between the steering wheel and the steering wheels is not uniquely correlated. A certain degree of slippage occurs between the steering wheel angle and the steering wheel rotation, making it difficult for the driver to memorize the position of the steering wheel knob and resulting in inconvenient steering. The 106 Electronically Controlled Synchronized Steering Unit addresses this issue by collecting steering wheel and steering wheel angle signals, calculating the error between them, and controlling an electro-magnetic valve to replenish oil to the hydraulic steering system. This ensures precise correspondence between the steering wheel and the steering wheels, enhancing driving safety and comfort. It is widely used in high-end forklifts equipped with full hydraulic steering systems.

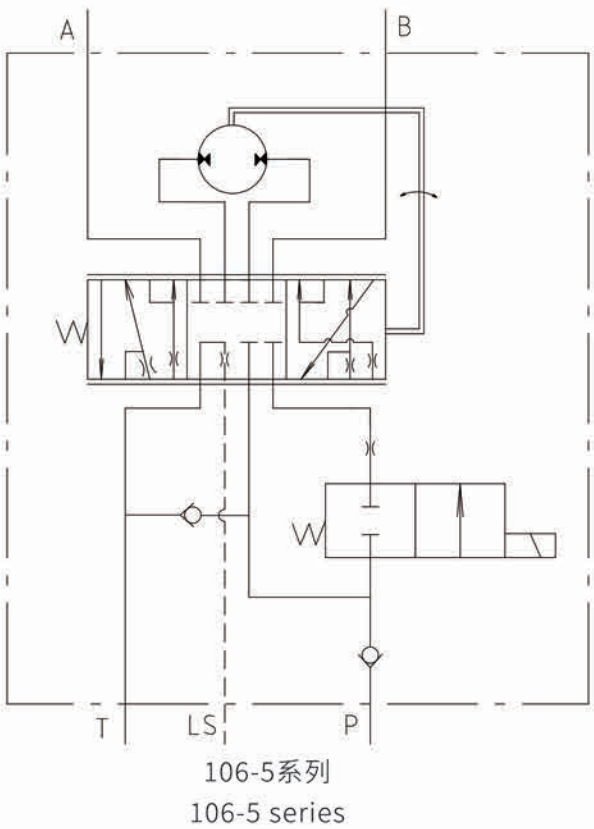
技术特点Characteristic

- 方向盘球头记忆功能
Steering Wheel Knob Position Memory Function
- 同步标定插头选配（亦可选择输出至上位机控制）
Optional Synchronization Calibration via Plug (or Output to Host Computer for Control)
- 方向盘转角信号CAN总线输出
Steering Wheel Angle Signal Output via CAN Bus
- 转向轮转角信号CAN总线输出
Steering Tire Angle Signal Output via CAN Bus

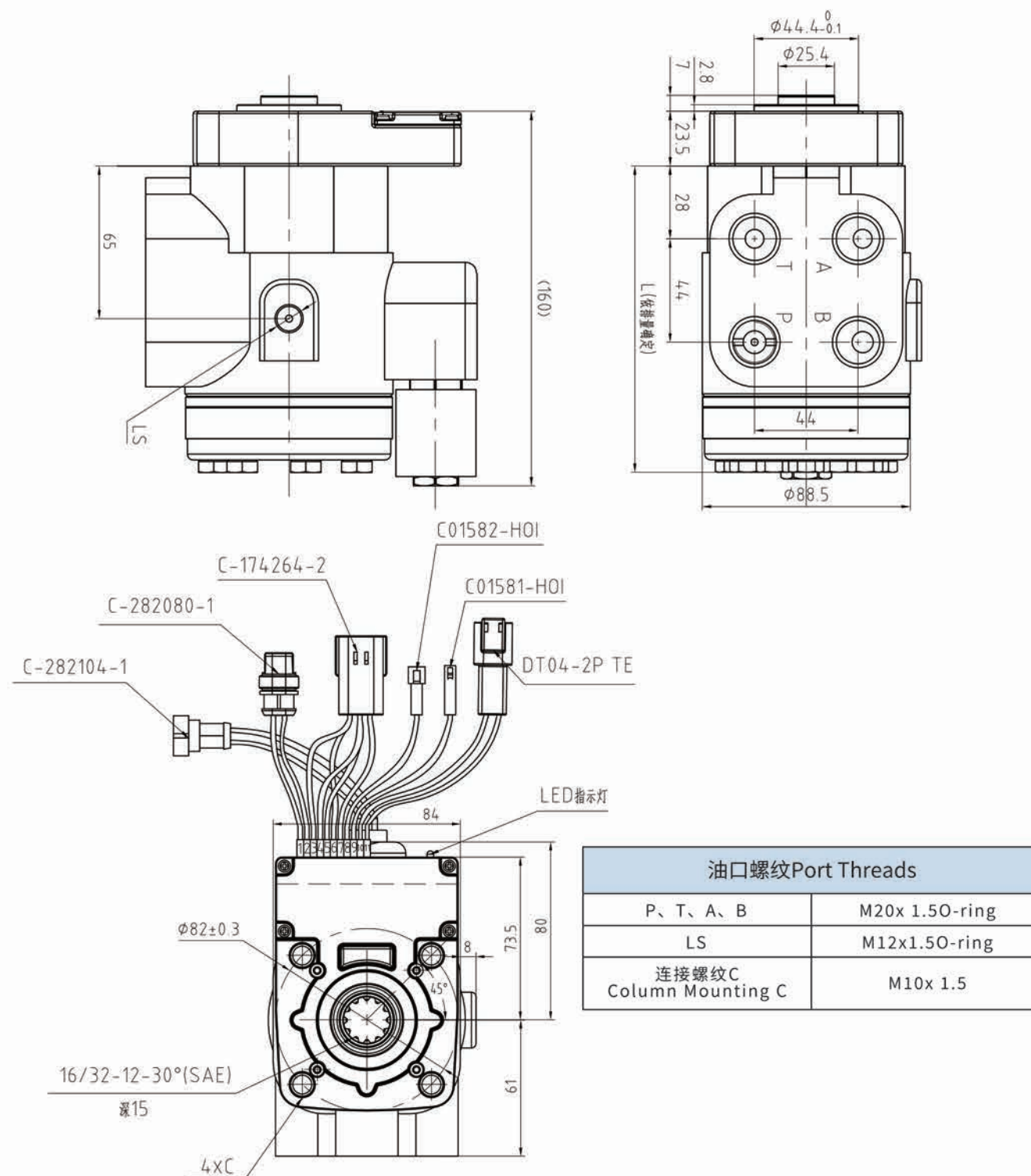
技术参数Technical Specifications

液 压 Hydraulic parameter	排量Displacement (mL/r)	50~250
	最大入口压力Max. input pressure (MPa)	≤17.5
	最大连续背压Max.cont.back pressure (MPa)	≤1
	动力转向扭矩Power Steering Torque (N · m)	≤1.6
	同步精度Angle synchronization accuracy	≤2°
	工作温度Operating temperature	-30℃~60℃
电 气 Electrical parameter	重量Weight	7kg
	控制器电源Controller power supply	8~36VDC
	消耗功率Power Dissipation	≤2W
	控制器防尘防水等级Enclosure	IP67
Deutsch DT04-2P		可输出方向盘轮角的CAN通讯信号 Steering wheel angle output via CAN bus

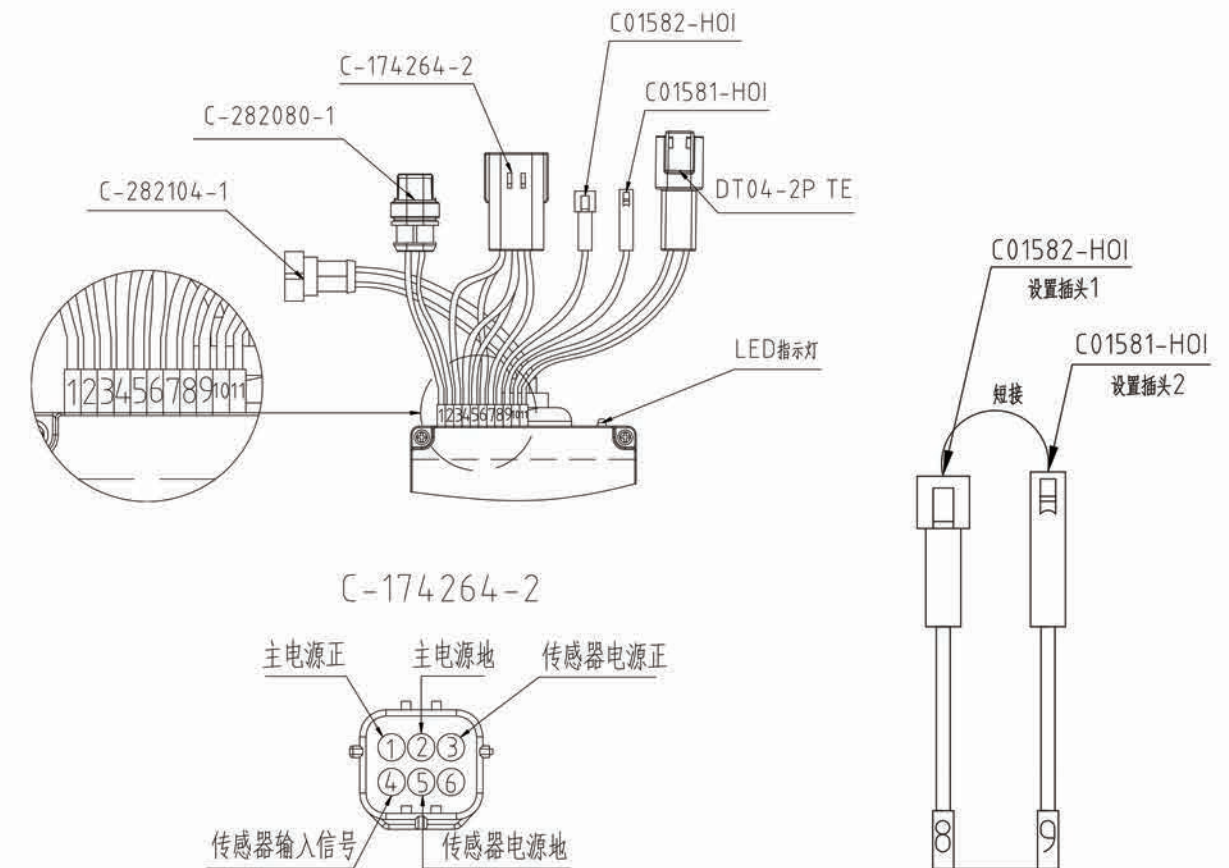
液压原理图Schematic Diagram



外形图Profile



连接器规格Connector Specification



接线端子信息表 Board Information

电线序号Number	定义Definition	描述Description	六孔插头序号Six-hole Plug
1	DOHI	电磁阀输出正Solenoid Supply	
2	DOHI_GND	电磁阀输出地Solenoid GND	
3	+12VINI	主电源正Main Power Supply	1
4	12V_GND	主电源地Main Power GND	2
5	5Vout_GND	传感器电源地Sensor GND	5
6	AIVI	传感器输入信号Sensor Signal	4
7	+5VOUT	传感器电源正Sensor GND	3
8	DILI	设置插头1Setting Plug 1	
9	DILI_GND	设置插头2Setting Plug 2	
10	CAN_H	CAN高电平信号线CAN High Signal Wire	
11	CAN_L	CAN低电平信号线CAN Low Signal Wire	

出厂时控制器插头C-282080-1(端子1、2)已连接电磁阀线圈的插头C-282104-1
At the factory, the controller connector C-282080-1 (Terminals 1, 2) is pre-connected to the solenoid valve coil connector C-282104-1.

同步功能标定过程 Synchronization Function Calibration Process

- 断开系统电源，短接设置插头 1 和 2（端子 8 和 9）信号。
Disconnect the system power supply and short-circuit the signals of setup connector pins 1 and 2 (Terminals 8 and 9)
- 打开系统电源，确认 LED 指示灯均匀循环闪烁 1 次。
Turn on the system power supply and confirm that the LED indicator uniformly cycles and flashes once.
- 将车轮和方向盘打到直行位置，调整到中位的位置。
Position the wheels and steering wheel in the straight-ahead direction and adjust to the neutral position.
- 断开设置插头信号，保持电源打开。系统开始标定功能，开始记录中间位置，确认 LED 灯均匀循环闪烁 2 次。
Remove the short-circuit from the setup connector pins while keeping the power on. The system will begin the calibration function and start recording the center position. Confirm that the LED uniformly cycles and flashes twice.
- 将方向盘从中位开始顺时针转到底，再逆时针转到底，再顺时针转到直行位置（方向盘转到底后确保不滑落，方向盘从中心到底必须超过 2 圈）。
Rotate the steering wheel clockwise to the end from the neutral position, then rotate counterclockwise to the end, and then clockwise back to the straight-ahead position. (Ensure no slippage when the steering wheel is turned to the end. The steering wheel must rotate more than 2 full turns from center to end.)
- 标定完毕，则 LED 灯常亮，如不亮或继续闪烁（包括 2 次），对照指示灯功能表，解决相应问题后重新进行上述标定流程。
If calibration is completed, the LED will remain steadily lit. If it does not light up or continues flashing (including twice), refer to the indicator function table to resolve the corresponding issue, and repeat the above calibration procedure.

关于产品 ▶▶ SWAS 方向盘角度传感器 SWAS STEERING WHEEL ANGLE SENSOR

SWAS 方向盘角度传感器安装在方向盘转向柱和全液压转向器中间，通过 CAN 通讯接口向控制器提供实时的角度和方向数据，监控方向盘转动情况，为自动驾驶控制器提供服务的一款高精度集成角度传感器。适用于 121 自动驾驶电控转向器、ASV 自动驾驶电控阀、106 同步转向器等电控转向单元使用，或应用于其他需检测方向盘位置和速度的全液压转向系统。

The SWAS (Steering Wheel Angle Sensor) is a high-precision integrated angle sensor installed between the steering column and the full hydraulic steering unit. It provides real-time angular position and directional data to the controller via CAN communication interface, monitors steering wheel rotation, and supports autonomous driving control systems. This sensor is compatible with steering units such as the 121 Autonomous Electro-Hydraulic Steering Unit, ASV Autonomous Electro-Hydraulic Valve, and the 106 Synchronized Steering Unit, as well as other full hydraulic steering systems requiring detection of steering wheel position and rotation speed.



技术特点 Characteristic

- 高分辨率 $\leq 0.5^\circ$
High resolution $\leq 0.5^\circ$
- 无接触式获取方向盘转角信号
Non-contact steering wheel angle signal acquisition
- 超薄集成结构
Ultra-thin integrated design
- 高可靠性
High reliability
 - 人工转向故障时报警提醒
Alarm alert in case of manual steering failure
 - 自动转向故障时自动退出并报警提醒
Automatically disengages and alerts in case of autonomous steering failure
- CAN 通信
CAN communication
- 转向柱和全液压转向器标准结构安装
Standard structural installation between steering column and hydraulic steering unit
- 耐高温、振动、灰尘，可用于恶劣工作环境
Resistant to high temperatures, vibration, and dust; suitable for harsh working environments

外形图及针脚功能Profile



通信协议Communication Protocol

注意事项：确保角度传感器和转向柱外花键无受力插入转向器和角度传感器内花键，否则角度传感器功能可能会受影响。
Precautions: Ensure the angle sensor and steering column external spline are inserted into the steering unit and angle sensor internal spline without any applied force. Otherwise, the functionality of the angle sensor may be impaired.