Electronic Drilling Recorder (EDR) Technical Data Summary

RCP'S EDR system is highly reliable and easy to maintain drilling instrumentation and data acquisition system. The RCP EDR is highly customisable and can be fully tailored to meet specific customer requirements.

The full EDR specification is agreed upon between the customer and RCP during the Functional Design Specification (FDS) stage. However, typical EDR system technical specifications are summarised below.

Electrical Data	
Power Supply:	110-240VAC 50/60Hz or 24VDC
Rated Input Current:	2.2A @110VAC 1A @240VAC 10A @ 24VDC + HMI (60W Power per unit)
UPS:	Optional, >10min independent operation.
Control and Instrumentation Data	
EDR Control System Inputs:	8 x Digital Input (I.S/Non I.S)
	16 x Analogue Input (I.S/Non I.S)
	4 x Digital Output (I.S/Non I.S)
	5 x High Speed Counter Input (I.S, NAMUR)
	Unlimited Expansion for Input/Output signals – Dependent on required sensors.
EDR 3rd Party Tie-In Interfaces:	Data handover/reception via Profinet, Profibus, Modbus, TCP IP, Fibre, Serial, WITS0, WITSML, OPC-UA Analogue/Digital Signals (4-20mA, 0-10V, 0-24VDC)
EDR Field Devices:	(All devices rated to at least ATEX Zone 1, -20 to 50oC, IP65) – Configurable as per system requirements:
	1 x 250 Pulse per revolution, I.S NAMUR hollow shaft encoder
	3 x Inductive Proximity Sensor, I.S NAMUR
	6 x Pit Level Sensor – Radar (0-20m measurement), I.S
	1 x Pit Level Sensor – Radar (0-120m, high accuracy measurement), I.S
	4 x Pressure Sensor [Hookload, U-Tube, Degasser, Tongue Torque, Iron Roughneck Torque, Rig Air, HPU, Other] (0-5k psi measurement range), I.S
	2 x Hammer Union Pressure Sensors [Standpipe, Choke, Cementing, Other] (0-15k psi), I.S
	1 x Flow Sensor (Adjustable paddle) I.S
	1 x Combined Sounder/Beacon I.S
	3 x 22'', Colour, Touchscreen HMI, Ex de (1920 x 1080, Capacitive Touch, IP66)
	EDR Safe Area Equipment:
	2 x Safe Area Workstations
	1 x Printer – Optional
EDR Communications:	Ethernet + Fibre Optic.
Optional Equipment:	Handheld Tablet Display (Including EDR Wireless area network)
Optional Features:	Emergency Shut Down Integration
	E-Stop Logging
	Cable Plug-In Connectors

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System Supplied As:	
	EDR System Only Option
	EDR System + Sensors Option
	EDR System + Sensors + Installation Materials Option
System Operation Data	
EDR Operation:	Real-time data monitoring and logging. The EDR interface provides Drillers with a comprehensive data reporting via analogue/digital readouts, trends, alarm and event pages.
EDR Functions:	Real-time data display, Real-time and historical trend display, Pit Volume Totalisation (including pump stroke totalisation), Configurable high/low alarms, Pipe tally, Personalised Trends**,** Top Drive Gear Ratio, Liquid seal monitoring, BOP and Diverter data display, Fine Scale Gauge Display, Valve position indication, Report generation, Alarm Display and Logging, Real-time and historical event display and logging, Logged data exporting, Data handover and integration with 3rd party systems, Calculator, Notes, Remote cloud access. Additional functions available upon request.
EDR Measured Variables:	Bit Depth, Weight on Bit, Block speed, Block height, Hookload, Standpipe Pressure, Choke Pressure, Cement Manifold Pressure, Degasser Pressure, Liquid Seal Level – U Tube pressure, Return Flow, Gain/Loss, Pit Levels, Trip Tank Levels, Selected Pit Totalisation, Pump Stroke Counts, Pump Flow Counts, Selected Pump Totalisation, Pump Pressure, Top Drive/Rotary Table RPM, Top Drive/Rotary Table Torque, Tong Torque, Iron Roughneck Torque, Heave, Compensator Extension, Piping temperatures, Rig Air, Rig HPU pressure, Density, Gas H2S, Gas CH4, Aux Brake Current, Aux Brake Temperature, Wind Speed
Derived Values:	Bit Depth, Hole Depth, Weight on Bit, Block speed, Pit Totalisation, Pump Strokes/Speed/Flow totalisation, Liquid Seal Level, Ton-miles, Machine running hours (Top Drive/Rotary Table, Drawworks, Mud Pumps), Bit hours, Differential pressures, Tripping Speed, Lag Depth, Annulus Volume, String Capacity, Drilling activity hours (Circulating, Off bottom rotation, on bottom rotation, Sliding, Drilling),
PLC system:	<10ms system computational cycle
Data Logging:	Logged in 1s intervals. Typical 6-month retention, First in First out (FIFO) overwrite principle. Optionally expandable to 2+ years retention.
Reading Accuracy:	+- 0.1ft Block Height Measurement
	+- 0.1ft/s Block speed Measurement
	<+-0.5% Hookload
	+- 0.2mm for Pit Levels
	+-0.1mm for Trip Tank
	+-1RPM/SPM for Speed Measurements
	+-0.5% for Pressure Measurements
	Other parameter accuracy level can be provided upon request.
Maintenance:	Full system maintenance and calibration accessible via Drillers HMI, no need for a specialised service laptop.
Datalogging:	6 months FIFO (can be expanded to the required timeframe)

Remote Access:	Optional, via secure AWS cloud-based server
Redundancy:	Data Logging redundancy can be extended by use of a Redundant Array of Independent Disc (RAID) server
Alarm Functionality:	User Setpoint High and Low alarms, Hardware Alarms, System Alarms
	Shown as flashing on screen and raise alarm via external sounder beacon.
	The alarms can be accepted and silenced via Drillers HMI or optional external accept push button. Alarms are latching type, meaning that accepted alarm can be silenced, but will only clear once the alarming condition clears
Security:	Alarm setpoints and other functions accessible via Drillers password, System maintenance accessible via the Maintenance password.
Environmental Data	
Controller Mounting Dimensions:	Zone 2/Safe Area Version: 700 x 1030 x 350 mm (Height x Width x Depth)
	Available in 19'' Server Rack mounting options
HMI Mounting Dimensions:	22'' Version: 570 x 425 x 125 mm (Height x Width x Depth)
	15'' Version: 425 x 325 x 125 mm (Height x Width x Depth)
Ambient Installation Temperature:	Controller Installation Temperature: -20 to 40 °C
	Field Devices -20 to 50°C
IP Rating:	The full system can be supplied up to IP66
Hazardous Area Classification:	Option 1 – Safe Area EDR Control System + Field Devices certified for ATEX Zone 1
	Option 2 – Zone 2 EDR Control System + Field Devices certified for ATEX Zone 1
	Option 3 – Full system, rated for ATEX Zone 1 – Custom Solution
Compatibility:	Compatible with Offshore and Land Drilling Rigs, DC/SCR, AC, hydraulic/mast/ram drilling rigs.
Standard Compliance:	Systems Designed to IEC/EN 60079-0, IEC/EN 60079-7, IEC/EN 60079-11, IEC/EN 60079-28, BS 6761
	Can Comply with API RP551, IEC 61439, IEC 60204-1, IEC 61508, EN 55022, EN 55024, IEC 60950-1, API 554