



DRAULICS

**SMART PU – CAGE LEVELING
machine management**



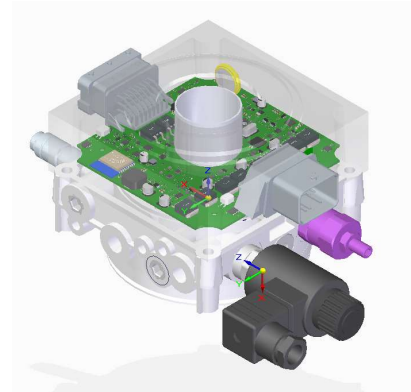
SMART PU CAGE LEVELLING + WEIGHING



Our patented SMART POWER UNIT technology offers to manufacturers a one-stop-shop solution for cage leveling system in PLE. It reduces TCO due to a **simplified electric and hydraulic circuit**, reducing the time-to market. SMART POWER UNIT is using a fieldbus connected Hydraulic Power Pack with a Safety Compliant built in PLC and Sensors. The solution is ready for PL-D safety level

The solution for cage leveling consist of:

- SMART POWER UNIT
 - Hydraulic power pack with proportional valve
 - Embedded SIL 2 programmable PLC
 - Embedded roll/pitch sensor
- CAN BUS redundant angle sensor



Features:

The Smart Power Unit with Cage Leveling software is expressly developed for *cage leveling function*. This Hydraulic power pack is sized in order to meet the leveling cylinder forces and speed. Its built-in PLC allow a direct drive of the proportional valve and the starter relay of the DC electric motor. The Embedded PLC has a built-in 3axis accelerometer sensor which can be redunded with an external CAN-BUS angle sensor. The controller inside the hydraulic power pack detects the horizon through the sensor and activate the DC electric motor and the proportional valve to keep the cage horizontal while the lifting boom is operating. The Controller is able to direct drive the proportional valve using PWM output.

Forced tilt for manual cage un-leveling (for safety or parking/working operations) is possible as well through CAN-BUS or on-off switch: the controller can manage tilting limits and conditions. The Smart Power Unit is equipped with two CAN-BUS lines which can be used to *broadcast the control panel* signals from the cage to the proportional valves in the turret.

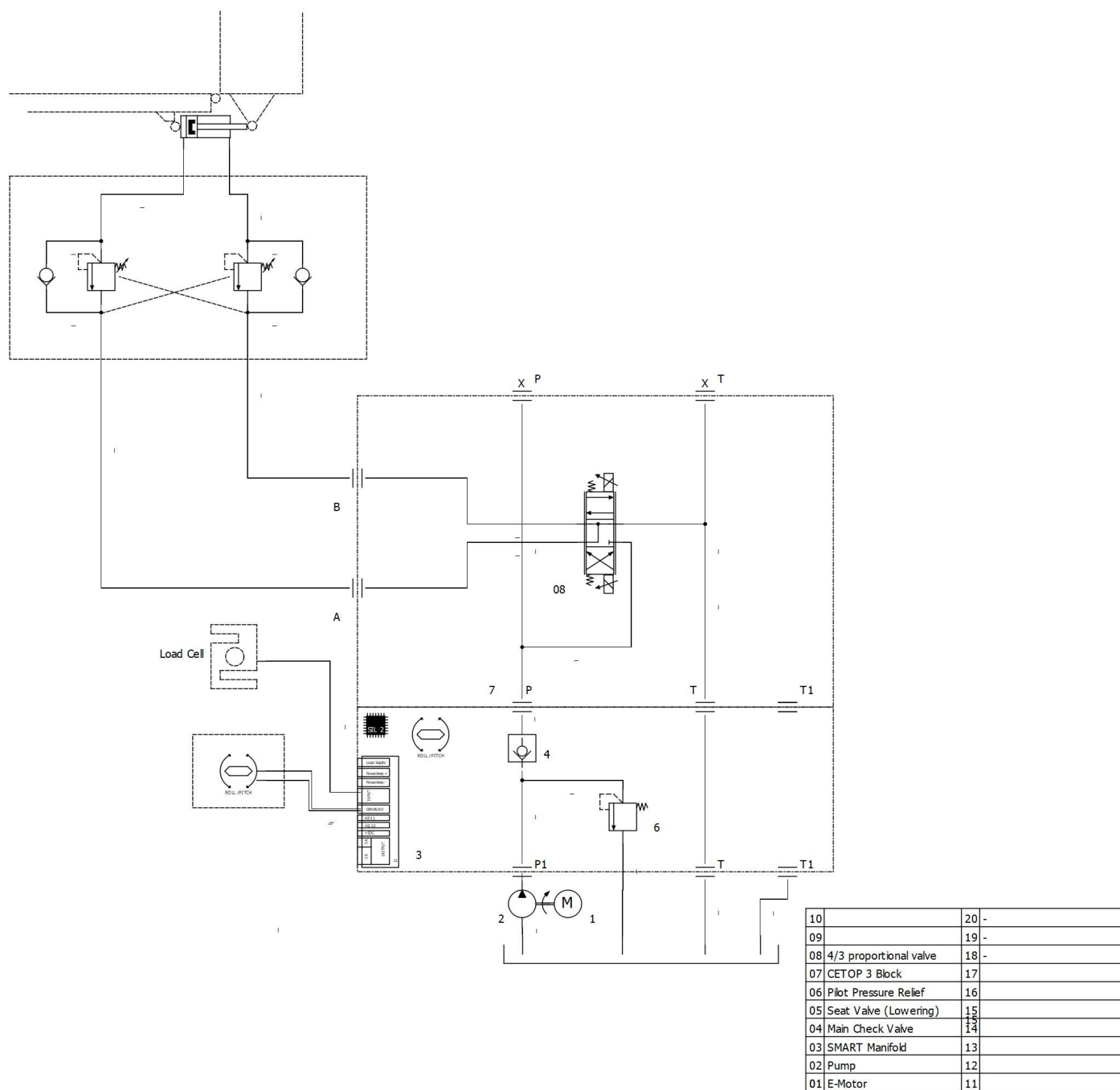
The Smart Power Unit is equipped with 12 analog/digital input that can be used to digitise the joysticks in the cage control panel. The controller is provided with extra output able to *drive additional valves* and eventually Working Lights and signalisations. A wind sensor can be connected as well for those machines which need it.

Cage Weighing System can be integrated through available analog input and broadcasted through CAN-BUS to the turret controller.

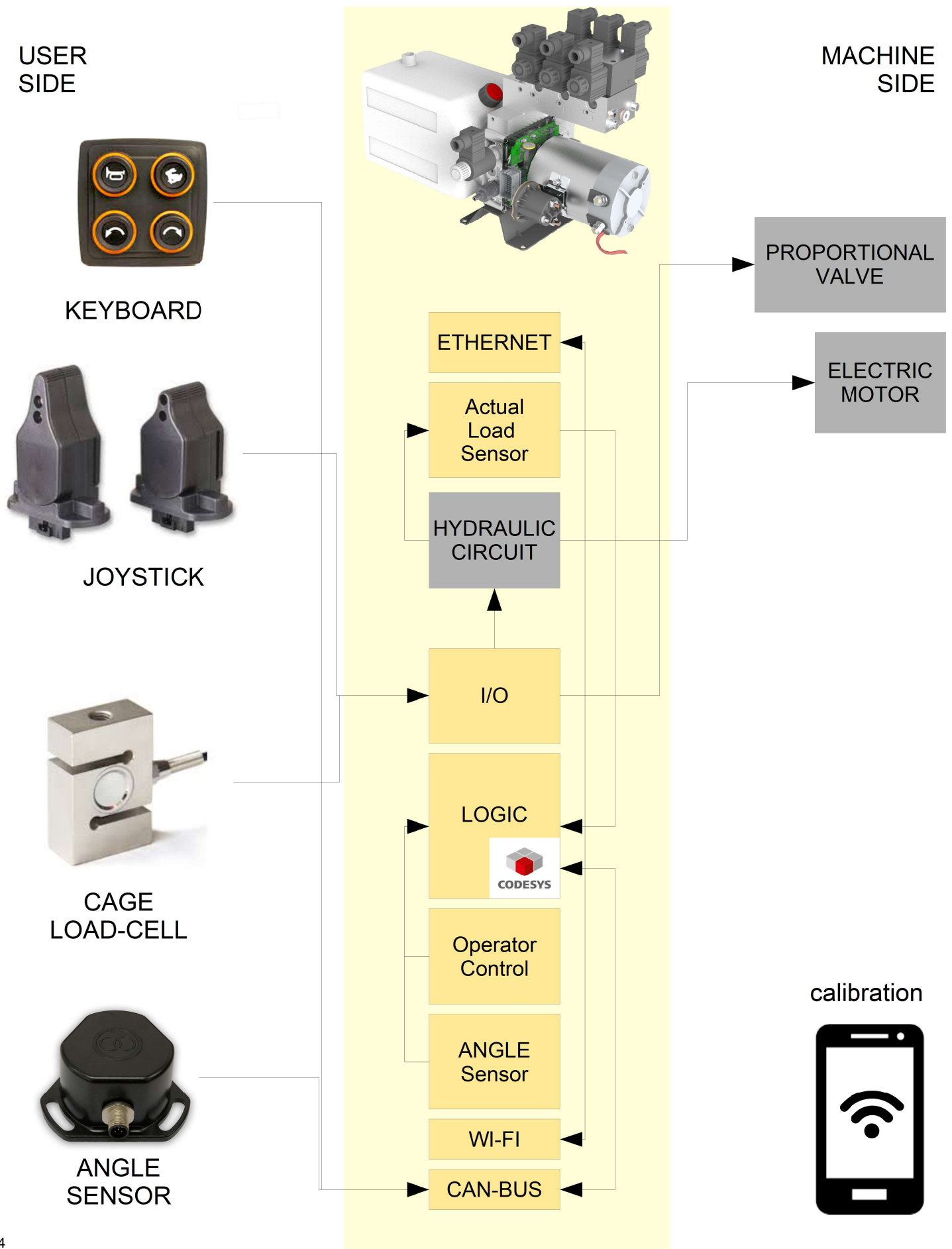
SMART PU CI.01 leveling system



CAGE LEVELING with weighing system option SMART POWER UNIT HYDRAULIC SCHEME



SMART PU CI BLOCK SCHEME



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HL2019-00/EN