Principle of the Electric System

- Steering principle
- CultiCam
- CultiCam Harness
- Plugs & Connectors

CULTICAM

CULTICAM - Concept

- The c*amera* detects the position of a field structure (relative to the center line of the camera)
- Position output of the camera is processed by the *Electronic Controller Unit* (ECU) which calculates a steering action depending on the configured setup
- Realization of the steering command requires integration of hydraulic components
- To optimize performance and for safety reasons the system requires a number of support *sensors* :
  - Displacement/Position sensor measuring hydraulic cylinder movement
  - Working position sensor giving hitch position
  - Speed sensor providing driving speed

- System is configured by a graphical user interface that runs on an ISOBUS compatible *terminal*

CULTICAM Camera

MK4 – Stereo Camera:

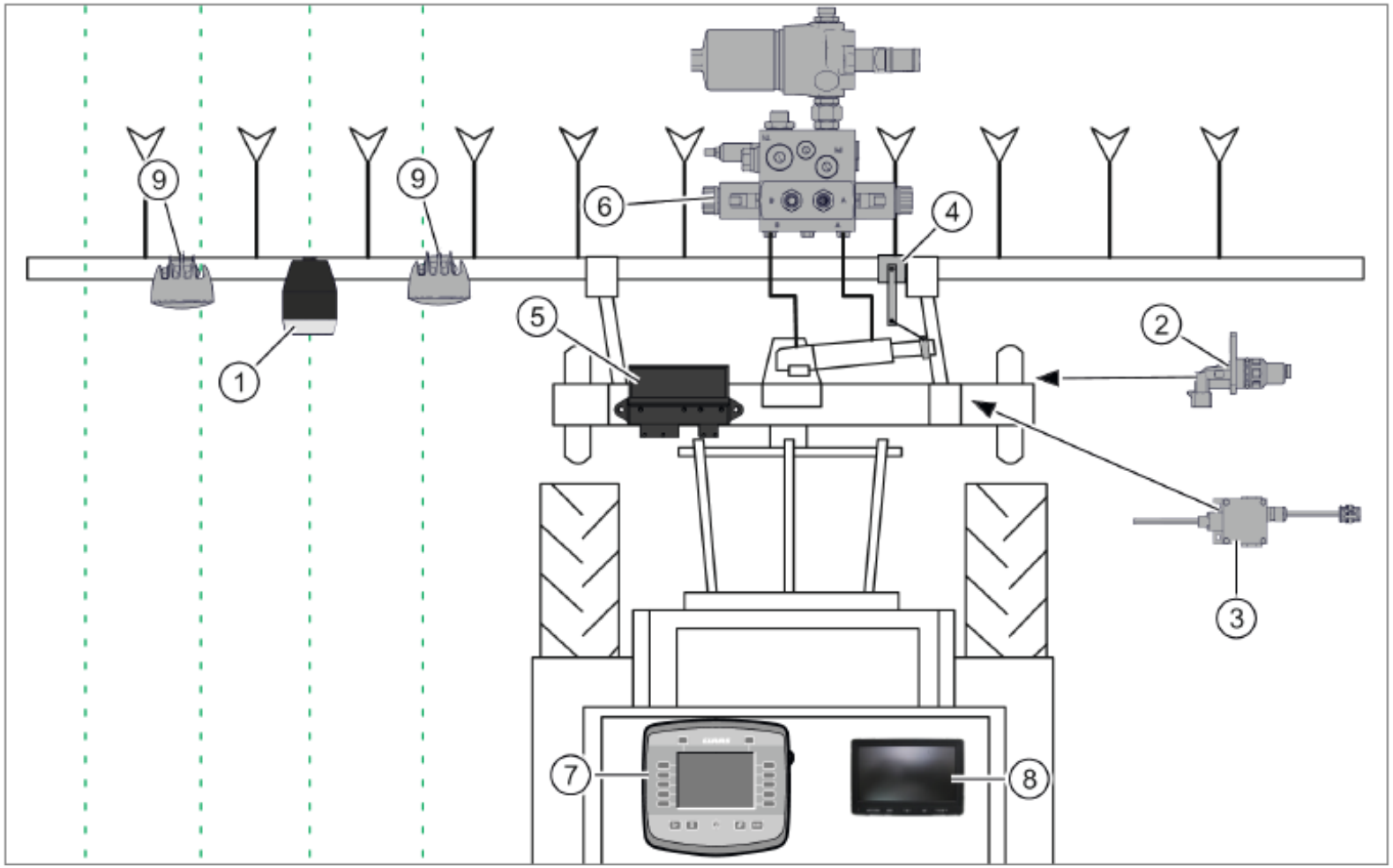
- Resolution: VGA – 640 x 480 pixels
- Optics: f = 3.6 mm
- Features:
  - 2D
  - Dual Exposure

MK4 MP – Stereo Camera

- Resolution: MP – 1280 x 1024 pixels
- Optics: f = 6.0 mm
- Features:
  - 2D
  - Dual Exposure
  - 3D
- License model

Components Overview

No	Description
1	Claas Communicator II (terminal)
2	Machine Battery
3	Camera
4	UBM module (control unit)
5	Working position switch
6	Steering angle sensor
7	Travel speed sensor
8	Xenon light
9	Sterring valve
10	Relay
11	Video monitor
12	Tractor harness
13	Implement harness



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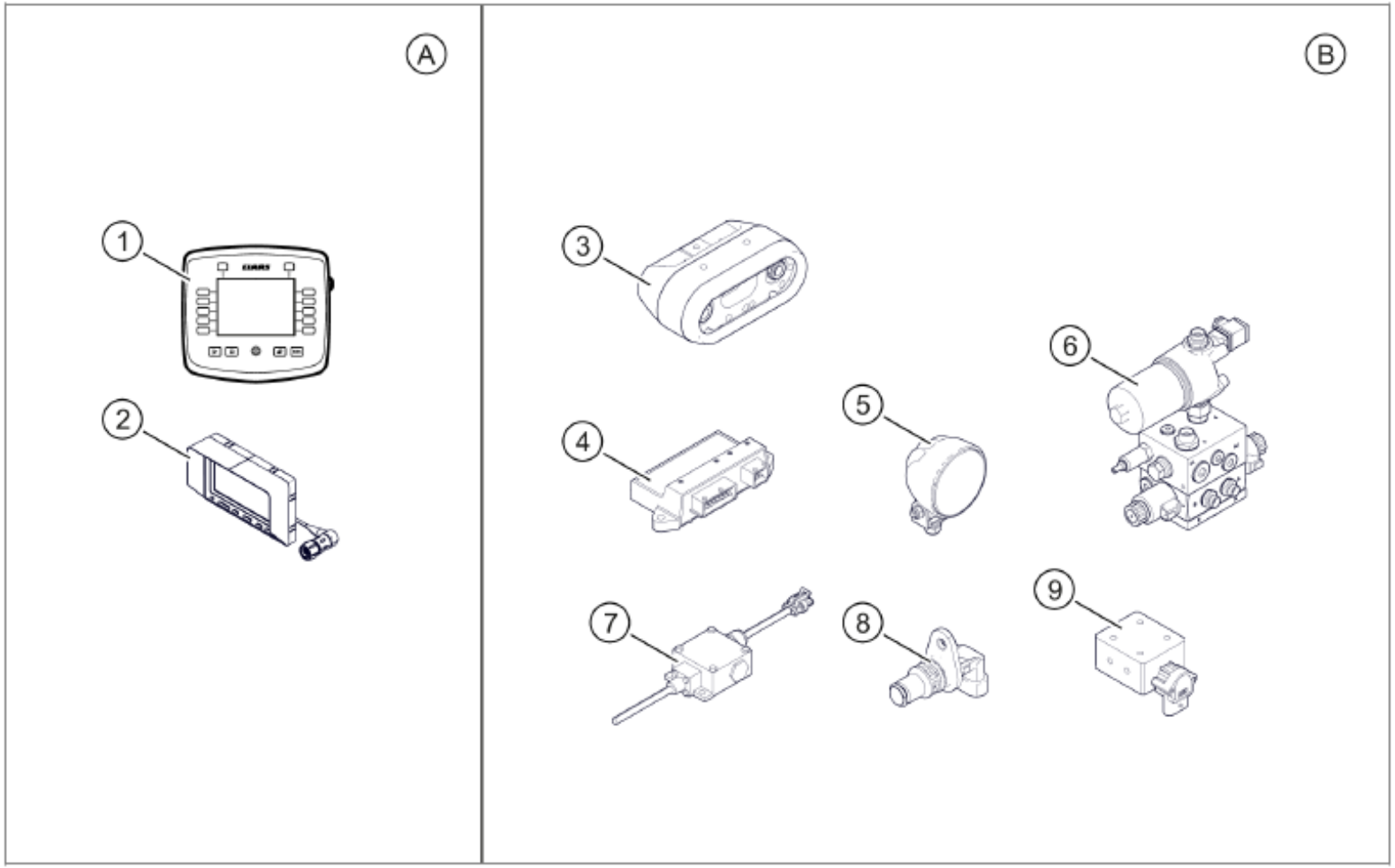
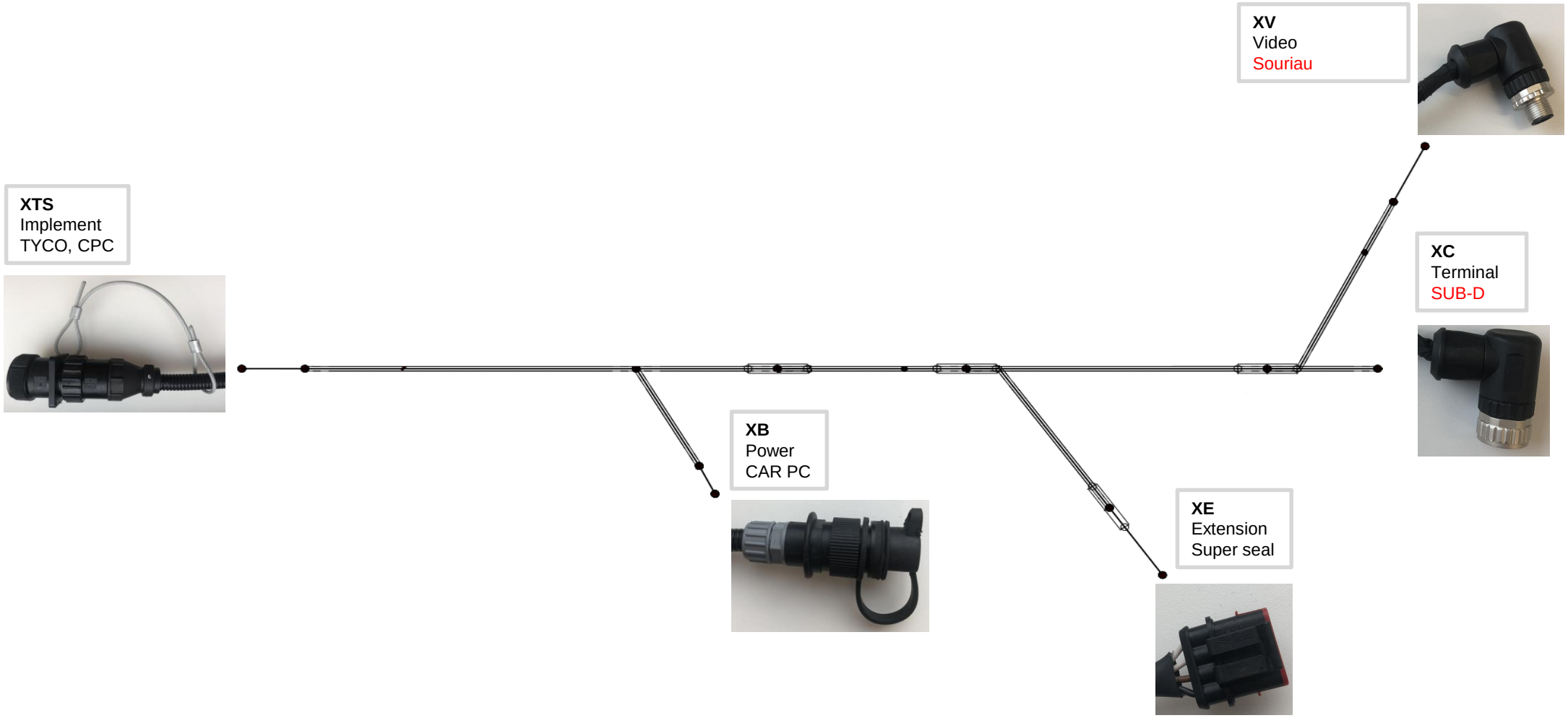


Harness

Tractor:

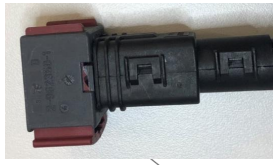
Implement:

Harness - Tractor Side



Harness - Implement Side

XUA
CME - 6 pins
Modul plug SAAB - A

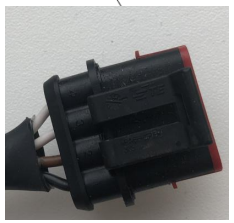


XD
Diagnostic
Binder, M12

XUB
CME-16 pins
Modul plug SAAB - B

RE
Relais
Hella

XES
Extension
TYCO, CPC



XMI
Manual Valve Control
Super Seal

XC
Camera
Amphenol, C16

XLED
LED Light

XHP
Hitsch Position
Super Seal

XS
Speed
Super Seal

XTT
Implement
TYCO, CPC

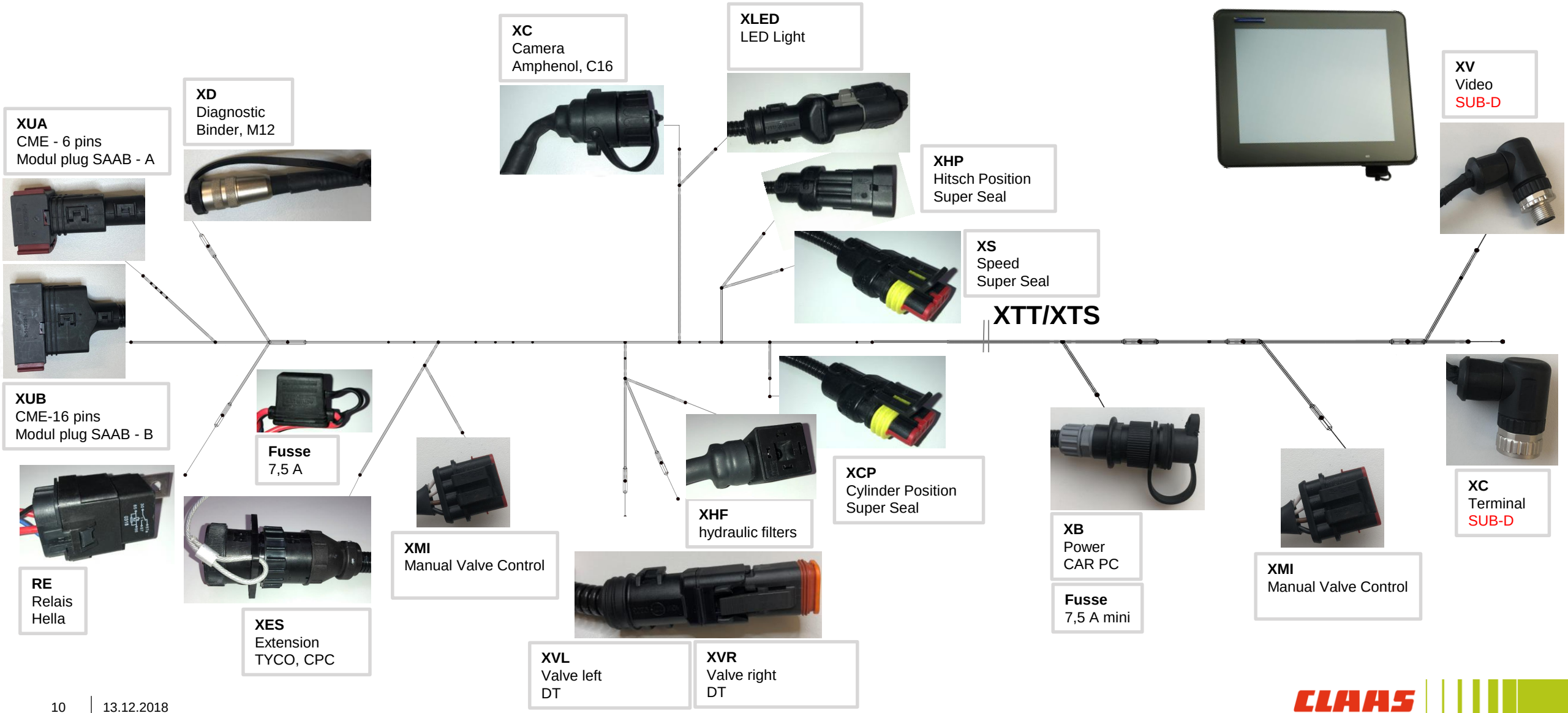
XHF
hydraulic filters

XCP
Cylinder Position
Super Seal

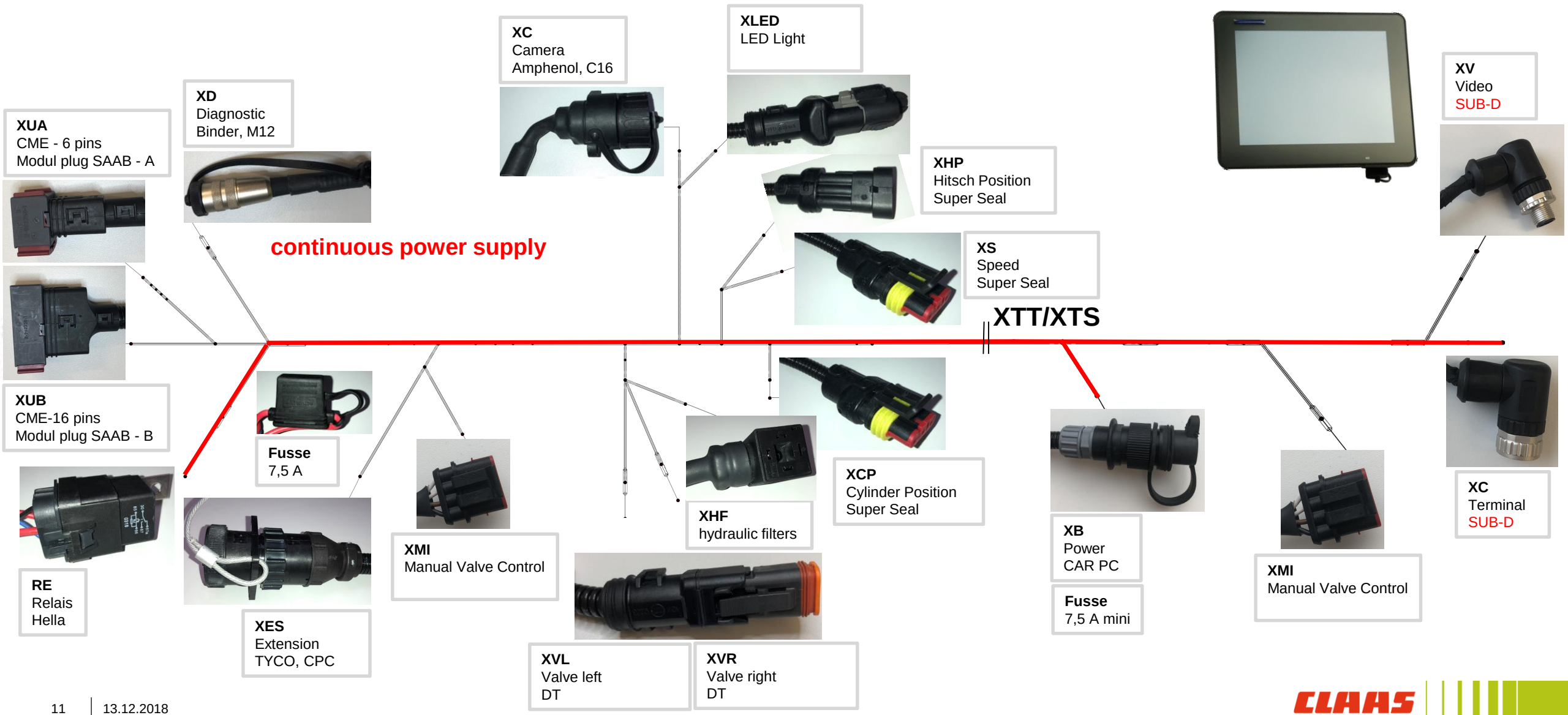
XVL
Valve left
DT

XVR
Valve right
DT

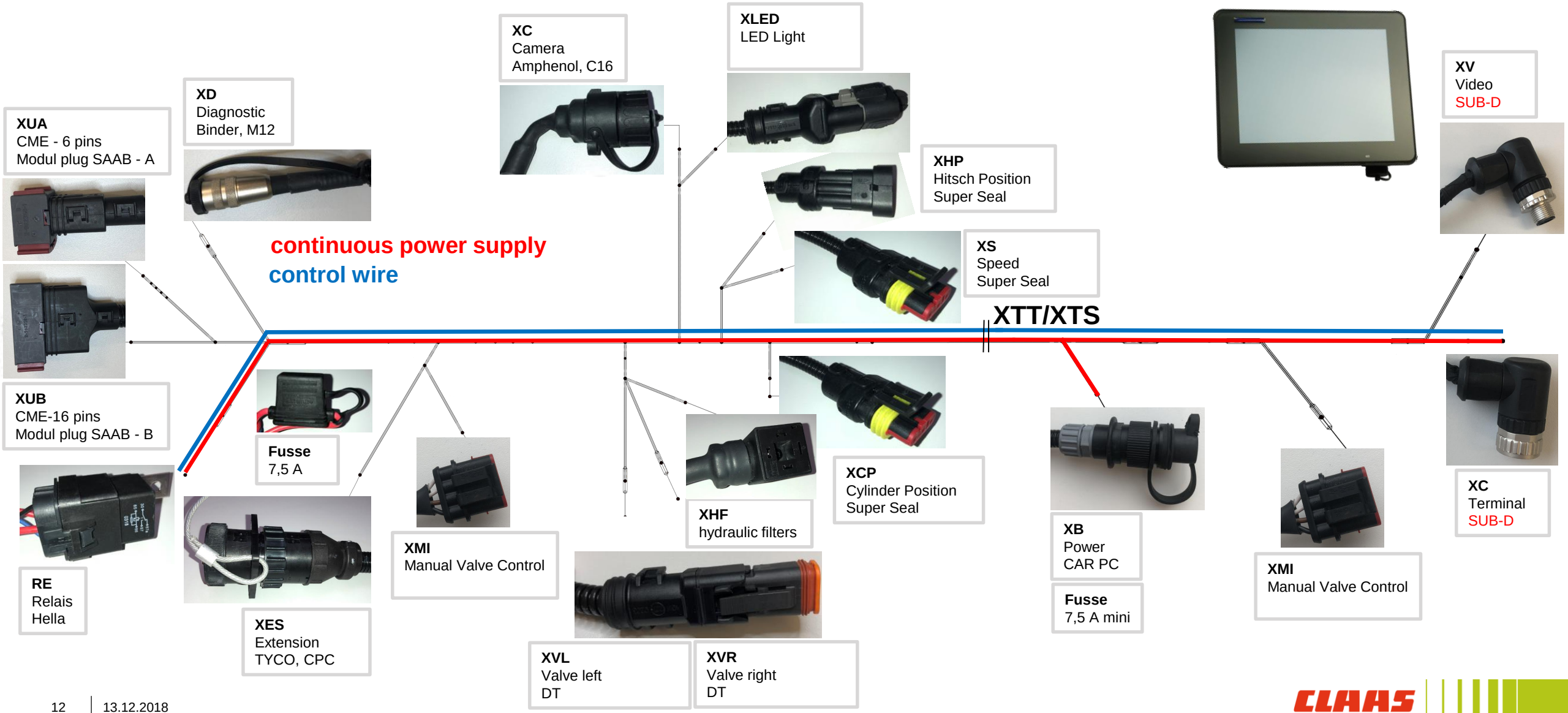
Harness - Implement and Tractor



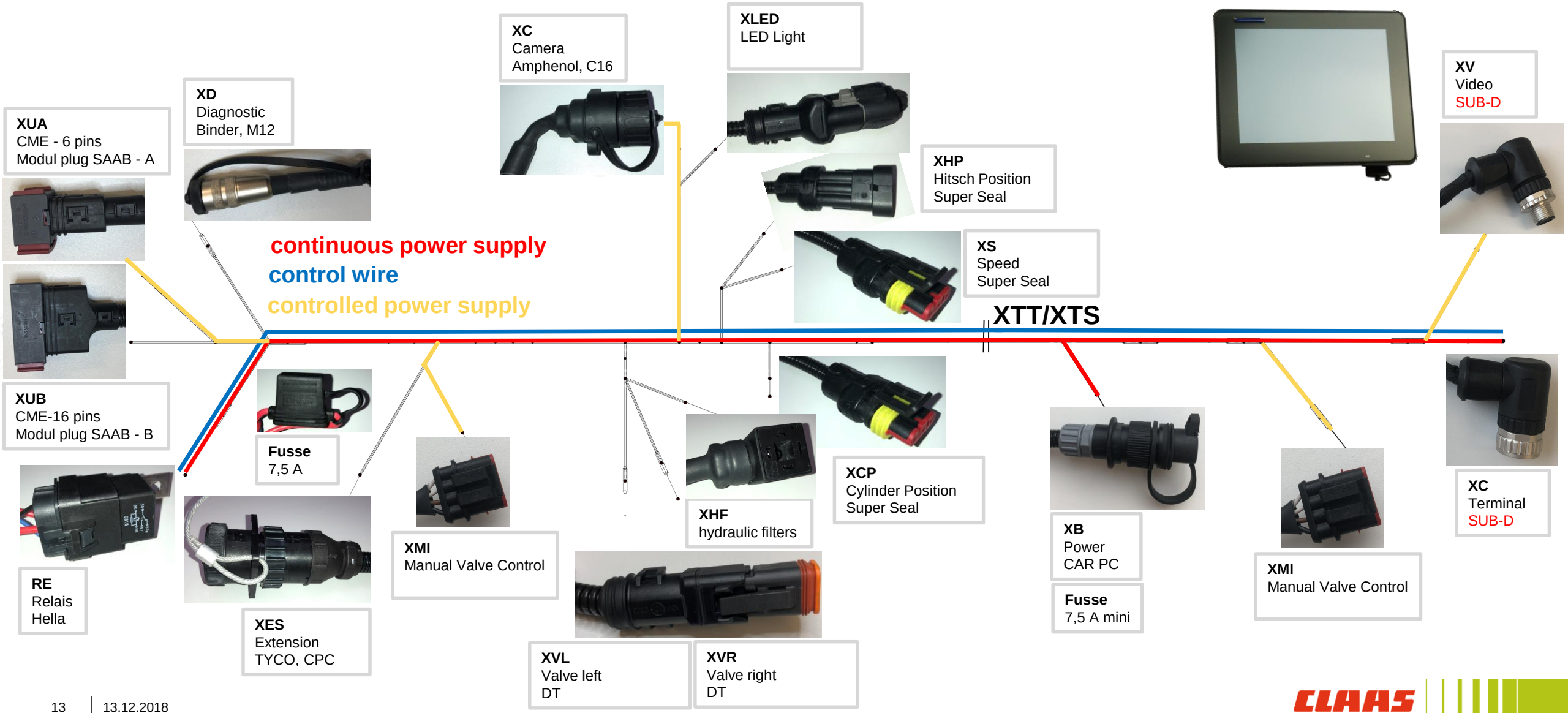
Harness - Implement and Tractor



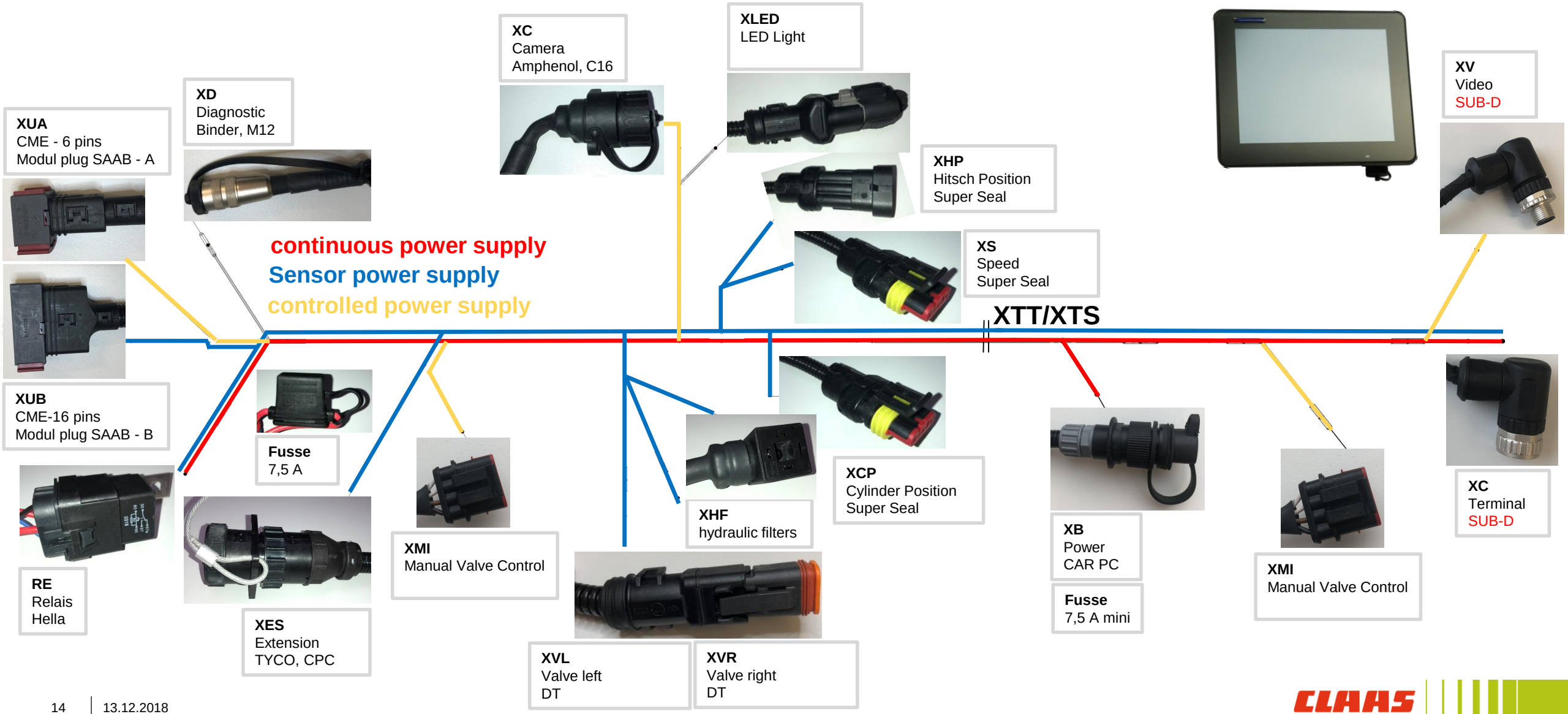
Harness - Implement and Tractor



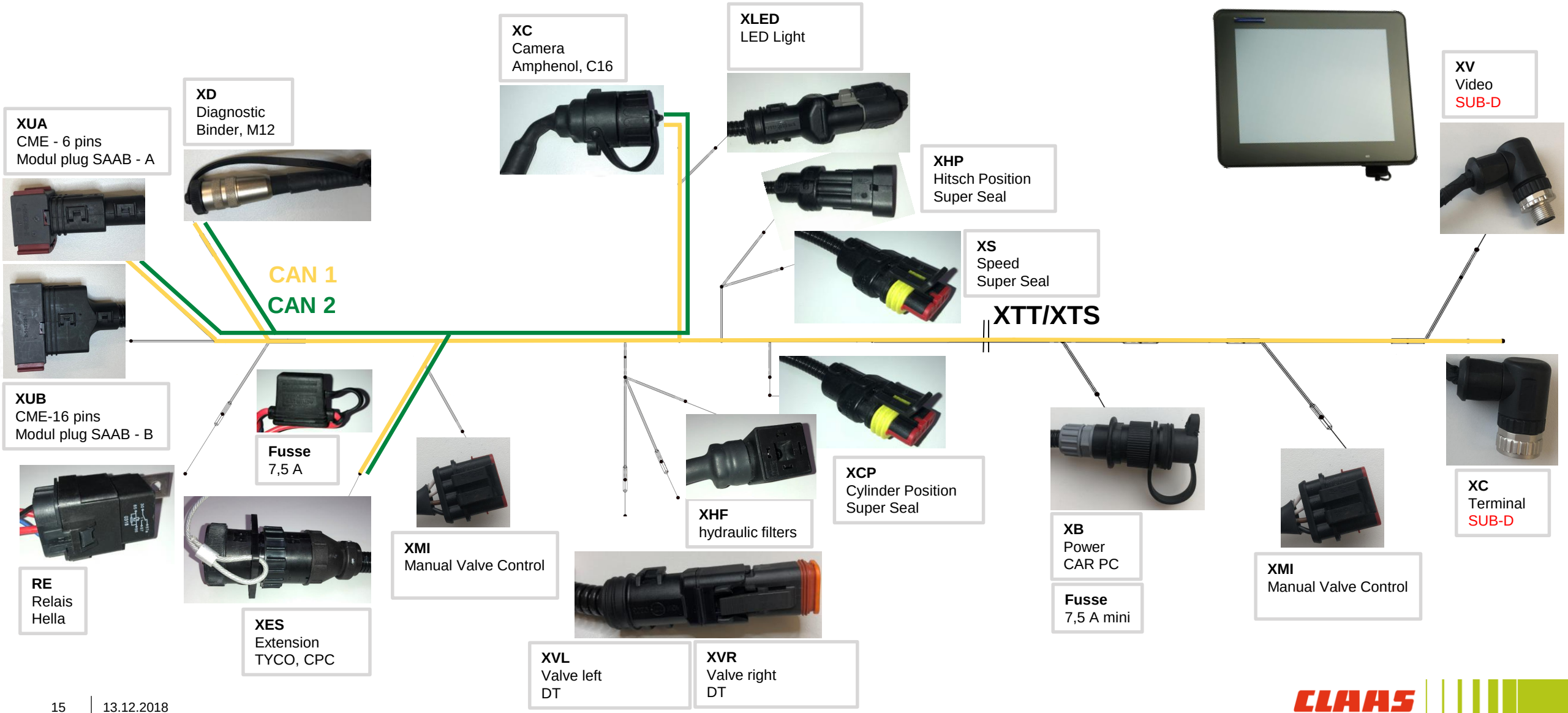
Harness - Implement and Tractor



Harness - Implement and Tractor

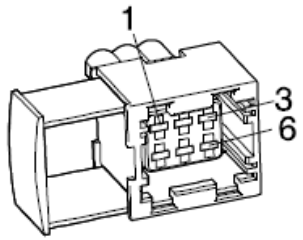


Harness - Implement and Tractor



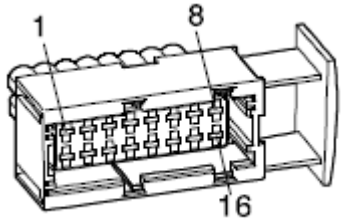
Connections to the UBM

- **XUA – UBM-A**
  - 2 CAN buses
  - Power



Pin	Description
1	CAN1 (L) ISO
2	PWR +12V
3	CAN2 (L) CAM
4	CAN1 (H) ISO
5	GND 0V
6	CAN2 (H) CAM

- **XUB – UBM-B**
  - Inputs
  - Power



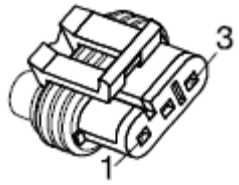
Pin	Description	Pin	Description
1	PWR +12V	9	Move right
2	GND 0V	10	Move left
3	Spare...	11	Valve left
4	Hitch Position	12	Cylinder Position
5	Light	13	Speed
6	Valve right	14	Hitch Position H
7	Valve left	15	Hitch Position L
8	GND 0V	16	Hydraulik Filter

Connections to diagnostic

- **XD – Diagnostic**
  - For the FLASH tool
  - UBM is flashed via CAN1
  - Terminal is flashed via CAN1
  - Camera is flashed via CAN2

Pin	Description
1	CAN1 (L)
2	CAN1 (H)
3	Spare...
4	Spare...
5	CAN2 (L)
6	CAN2 (H)
7	Spare
8	GND 0V

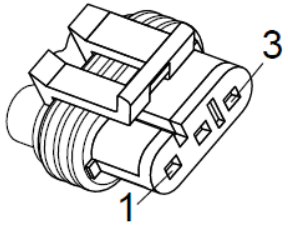
- **XHP – Hitch Position**



Pin	Description
1	Hitch Position
2	Hitch Position L
3	Hitch Position H

Connections to the Hitch Position / Speed Sensor

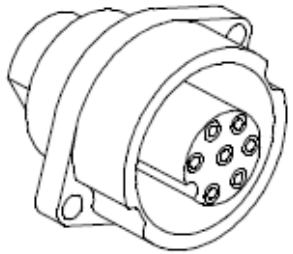
- **XS – Speed Sensor**



Pin	Description
1	GND 0V
2	Speed
3	PWR +12V

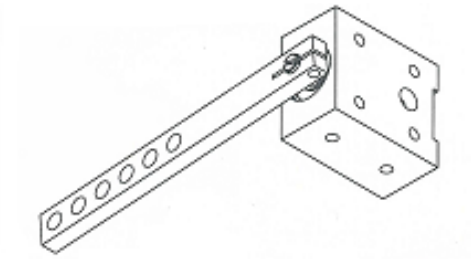
Connections to the Camera / Cylinder Position

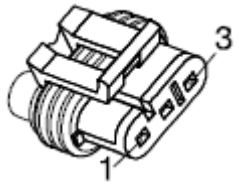
- **XC - Camera**
  - CAN
  - Power
  - Video signal



Pin	Description
1	PWR +12V
2	GND 0V
3	CAN2 (L) CAM
4	CAN2 (H) CAM
5	Shield
6	Video signal
7	Spare...

- **XCP – Cylinder Position**
  - Angle sensor 0-70°
  - Analog output 0.5V – 4.5V





Pin	Description
1	GND 0V
2	PWR +12V
3	Analog output

Connections to the Terminal & Battery

- **XC - Terminal**
  - ISO CAN
  - Power
  - Power ON signal

Pin	Description
1	R120 (Resistor)
2	CAN1 (L) ISO
4	R120 (Resistor)
6	GND 0V
7	CAN1 (H) ISO
8	CAN EN
9	PWR +12V

- **XB – Battery**
  - Power
  - Fuse in connector

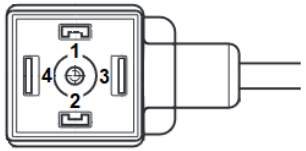
Pin	Description
1	PWR +12V
2	GND 0V

Connections to Video Monitor

- **XD – Video monitor**
  - Power
  - Video signal

Pin	Description
B	Video Signal
H	PWR +12V
J	GND 0V

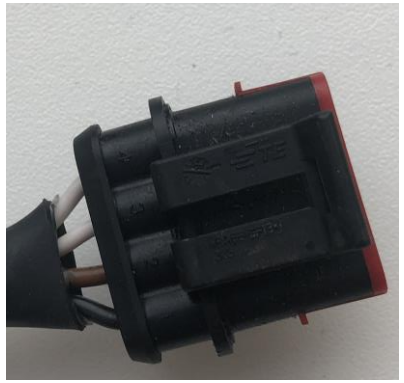
- **XHF – Hydraulic Filter**

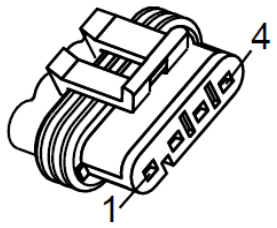


Pin	Description
1	PWR +12V
2	
3	Hydraulik Filter
4	
5	GND 0V

Extension Plugs

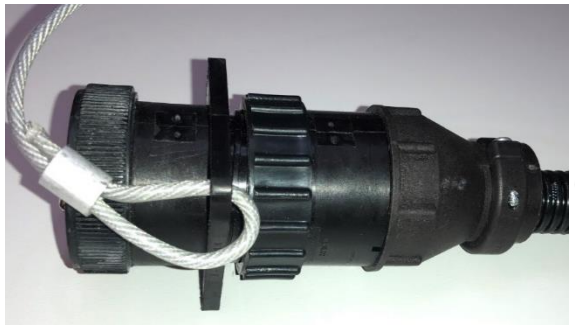
- **XMI – Manual Valve Control**
  - Move left
  - Move right

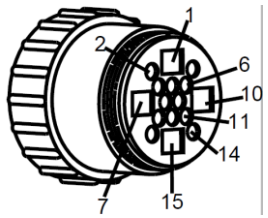




Pin	Description
1	PWR +12V
2	GND 0V
3	Move right
4	Move left

- **XES – Extension**





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2	CAN1 (L)	10	GND 0V
3	CAN1 (H)	11	
4	GND 0V	12	
5		13	CAN2 (L)
6		14	CAN2 (H)
7	PWR +12V	15	Light
8	PWR +12V	16	

Ligth Option


XERION
CLAAS