



# Cat<sup>®</sup> PMC-D/PMC-D20

## DRIVE CONTROL UNIT

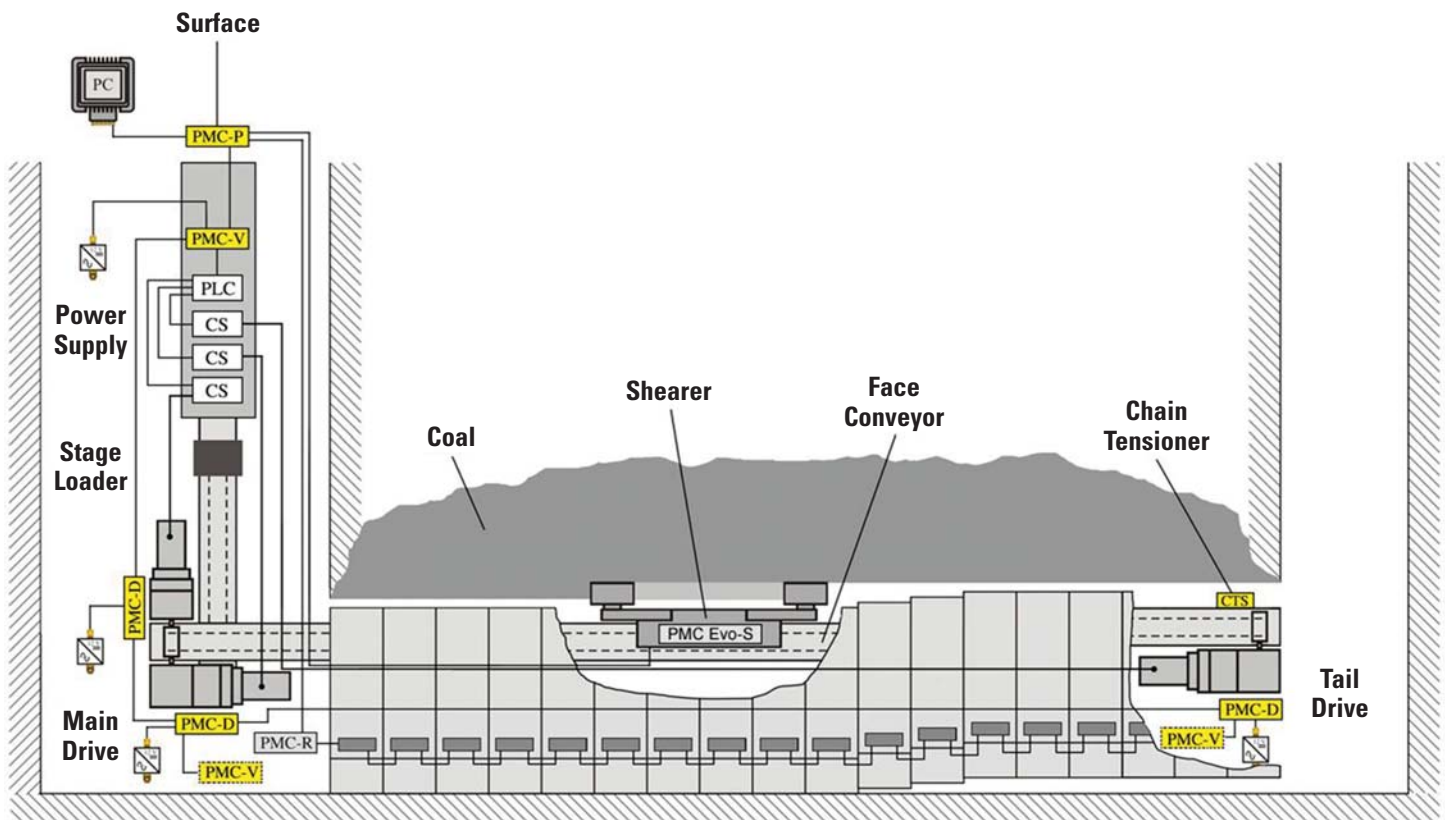
The intrinsically safe Cat<sup>®</sup> PMC-D control is used on shearer or plow faces to provide high level AFC (armed face conveyor) and plow automation. Each Drive unit needs to be equipped with one PMC-D control unit and equivalent I/O to operate the CST drives or UEL gearbox functions.

In such a system a Cat PMC-V provides the Human Machine Interface (HMI) to interfere with the PMC-D controls to operate manual mode, visualize and change parameters and show actual process values. Within a PMC-D system minimum one and typically up to 3 PMC-Vs are in equal operation. The PMC-D system can control extremely sensitive the speed and torque of highly powered AFC CST drive. Using Profibus network all PMC-Ds and PMC-Vs in a system could exchange process data over long distances with high frequency.

### ATTRIBUTES OF PMC-D/PMC-D20 CONTROL UNIT:

- Robust stainless steel design
- Highly reliable OS37 plug technology for complete gear box control
- SKK24 hose cables for bus system and additional I/O connection
- IP 68 rating (48 hr @ 1 m [3.28 ft] under water)
- HMI with 24 multi feedback keys (pressure point, led light)
- 63.5 mm (2.5 in) graphical monochrome display
- Multi language support
- Maintainability (brass bar mounting)
- Optional eight (8) additional ports for acceleration sensors (PMC-D20)

### Exemplarily System Layout of a PMC-D System (Shearer Face)



# PMC-D/PMC-D20 Drive Control Unit

## Features

### Main Features PMC-D Drive Control System

- “Distributed controller Intelligence per drive”
- Synchronized heavy load start up
- Soft start up
- Load sharing between conveyor drives
- Overload protection
- Motor braking feature
- Further used in plow operations:
  - Precise position detection
  - Overload protection

### Additional Features

- Usage of PMC-D for chain tensioning of AFC (front and rear conveyor) and Beam Stage Loader (BSL)
- In conjunction with Slacktronik direct BSL chain slack control and relating chain tensioning
- Usage of PMC-D for high accurate plow position control and monitoring
- Support VFD controlled drive applications
- Optional integration of “HEALTH for Longwall Vibration Analysis” function with PMC-D20 control unit:
  - Acceleration sensor interface for 8 sensor
  - Integrated communication for vibration analysis

## Electrical Data

Parameter	Typical Value	Maximum Ratings
Supply Voltage	12 V DC	9.5 V – 13.2 V
Supply Current	1 A	1.5 A

## Environmental Data

Parameter	Symbol	Typical Value	Maximum Ratings
Temperature	T <sub>amb</sub>	20° C (68° F)	-20° C – +40° C (-4° F – +104° F)

## Global Certifications

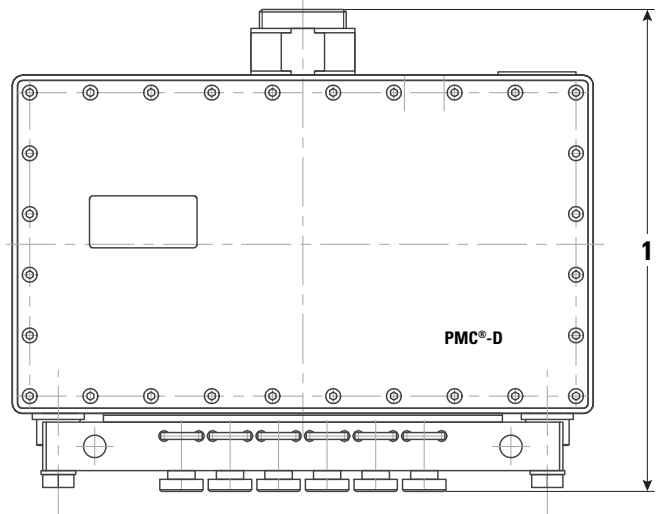
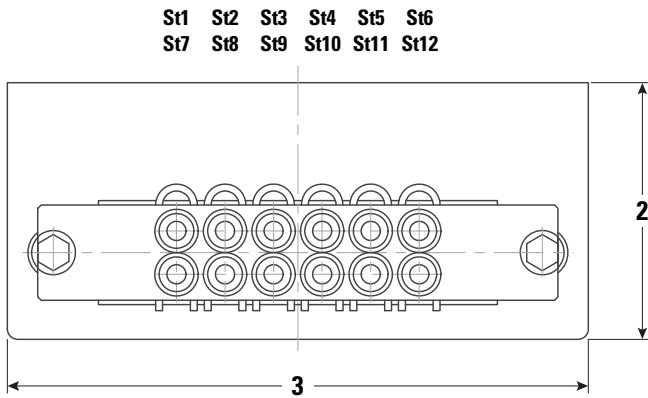
- Europe: ATEX
- U.S.: MSHA
- Russia: GOST
- Australia: IECEx, ANZEx
- China: MA
- More certifications on demand

Via a decentralized visualization and control unit at the face and/or the surface Cat MineStar™ capabilities are supported, especially HEALTH for Longwall.

## HEALTH for Longwall Vibration Analysis

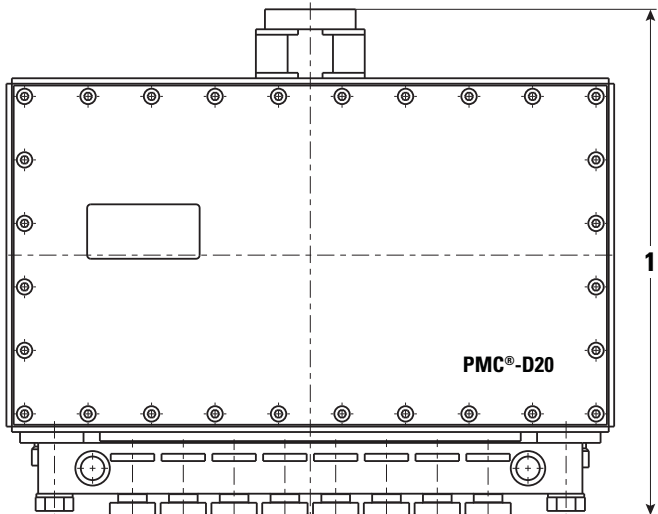
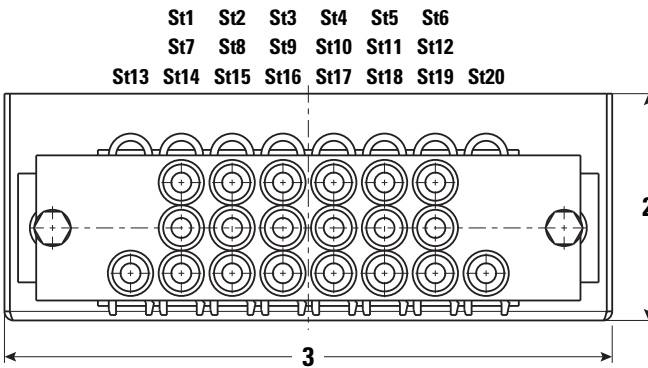
- HEALTH for Longwall Vibration Analysis (former VibraGuard) provides vibration monitoring functionality for longterm health monitoring of the following longwall related equipment:
  - CST gearbox and relating motor
  - UEL gearbox and relating motor
  - Stage loader gearbox and relating motor
  - Crusher and relating motor
  - Shearer haulage and ranging arm gearboxes
  - Water/HFA pump station

# PMC-D/PMC-D20 Drive Control Unit



## PMC-D Dimensions and Plug Assignments (All dimensions are approximate.)

1 Width	278 mm	10.94 in
2 Height	148 mm	5.83 in
3 Length	335 mm	13.19 in



## PMC-D20 Dimensions and Plug Assignments (All dimensions are approximate.)

1 Width	279 mm	10.98 in
2 Height	125 mm	4.92 in
3 Length	335 mm	13.19 in

# PMC-D/PMC-D20 Drive Control Unit

## Electrical Sockets

Socket	Pin 1	Pin 2	Pin 3	Pin 4
St1	Optocoupler Anode	Relay Contact NO: a	Relay Contact NO: b	Optocoupler Cathode
St2	+12 V (A) (output)	Serial Interface: RxD_0	Serial Interface: TxD_0	GND
St3	+12 V (B) (output)	Serial Interface: RxD_B	Serial Interface: TxD_B	GND
St4	+12 V (C) (output)	Serial Interface: RxD_C	Serial Interface: TxD_C	GND
St5	+12 V (C) (output)	Switch 1	Switch 2	GND
St6		Profibus: a (internal)	Profibus: b (internal)	
St7	+12 V (Power Supply)			GND (Power Supply)
St8	Multi Mode Input 4	Multi Mode Input 1	+8.2 V (output)	GND
St9	Multi Mode Input 5	Multi Mode Input 2	+8.2 V (output)	GND
St10	+12 V (output)	Multi Mode Input 3	+8.2 V (output)	GND
St11	+12 V (output)	Multi Mode Input 6	+8.2 V (output)	GND
St12		TP a	TP b	
St13		CM-Sensor +	CM-Sensor –	CM-GND
St14		CM-Sensor +	CM-Sensor –	CM-GND
St15		CM-Sensor +	CM-Sensor –	CM-GND
St16		CM-Sensor +	CM-Sensor –	CM-GND
St17		CM-Sensor +	CM-Sensor –	CM-GND
St18		CM-Sensor +	CM-Sensor –	CM-GND
St19		CM-Sensor +	CM-Sensor –	CM-GND
St20		CM-Sensor +	CM-Sensor –	CM-GND

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