



Cat® PMC-R

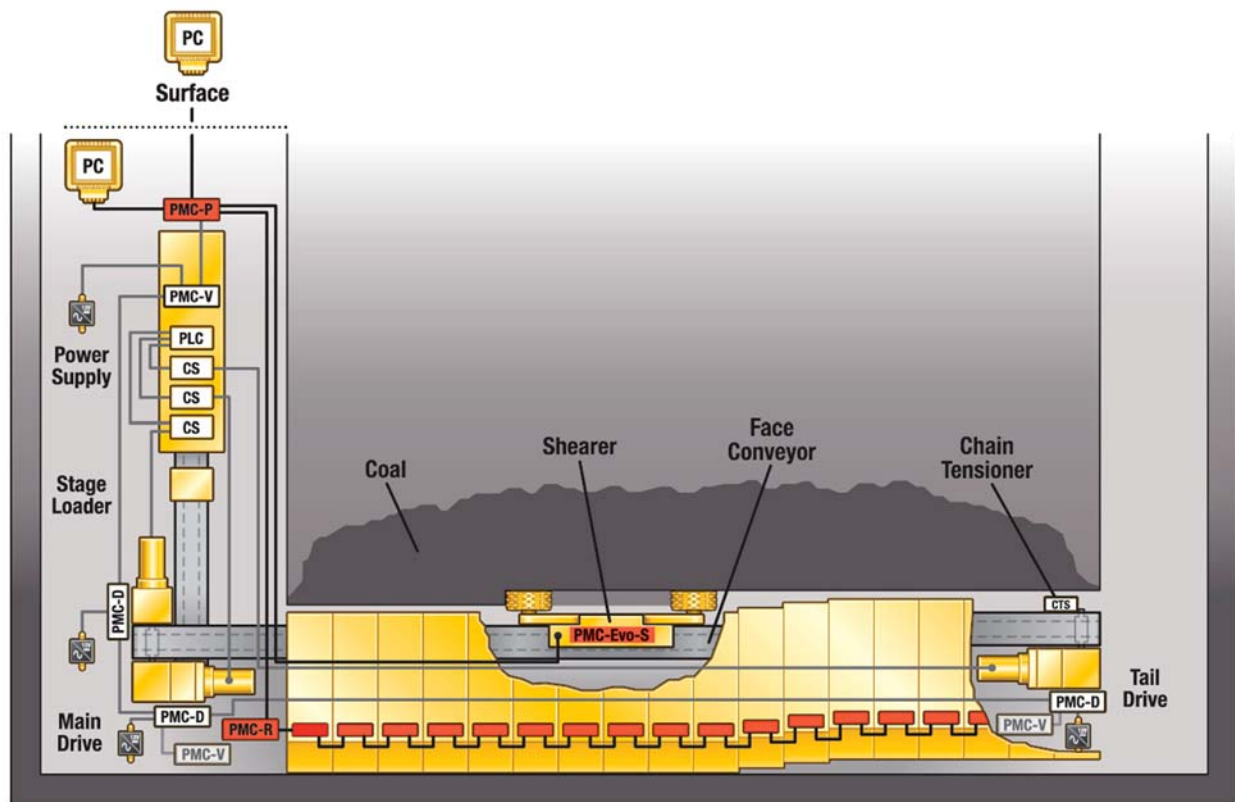
ROOF SUPPORT CONTROL

The intrinsically-safe Cat® PMC-R control units are used on shearer or plow faces to provide medium to high level of longwall automation. Each Roof Support needs to be equipped with one PMC-R control unit and a solenoid driver to operate the in-shield hydraulic functions and a set of peripheral components, like sensors for pressures and shield advance. The PMC-R can control and display all functions of a shield and is simultaneously the interface between operator and machine (HMI). The PMC-R system can control all individual shield functions based on a reliable network. As an interactive system, it allows the user to execute single shield functions as well as automatic functions. Important process values are continuously displayed as feedback for the operator.

FEATURES:

- Robust design (SKK24 sockets, hose cables, steel housing)
- IP 68 rating (48 hr @ 1 m [3.28 ft] under water)
- Separate emergence and lock switch
- HMI with 30 multi feedback keys (sound, pressure point, led light)
- Two (2) line LCD graphical display
- Multi language support
- Maintainability (brass bar mounting, screws from the front)
- Integrated infrared
- Up to three (3) separate solenoid driver modules

Exemplarily System Layout of a PMC-R System (Shearer Face)



PMC-R Roof Support Control

Main Features PMC-R Control System

- “Distributed Intelligence in each shield”
- Wide range of sensors and multiple solenoid drivers
- Easy diagnosis through communication between PMC®-R controls
- Various auto sequences
- Automated conveyor push modes
- Conveyor pullback functions
- Automated water spray functions
- Outrigger steering for conveyor steering (mostly plow faces)
- Automation of:
 - Block anchorage
 - Flipper
 - Sliding canopy
 - Gap shield
 - Several steering cylinder automation modes dependent on roof conditions

Peripheral Equipment

- Solenoid Driver Board (minimum one per Roof Support)
- Pressure Sensor
- Reed Rod
- Proximity Switch
- IR Transmitter and Sensor
- LED Warning Light
- IS Power Supply
- Diverse Data Coupler
- 3D-Tilt Sensor and 3D-Tilt Monitor
- Double Solenoid Valve

Global Certifications

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

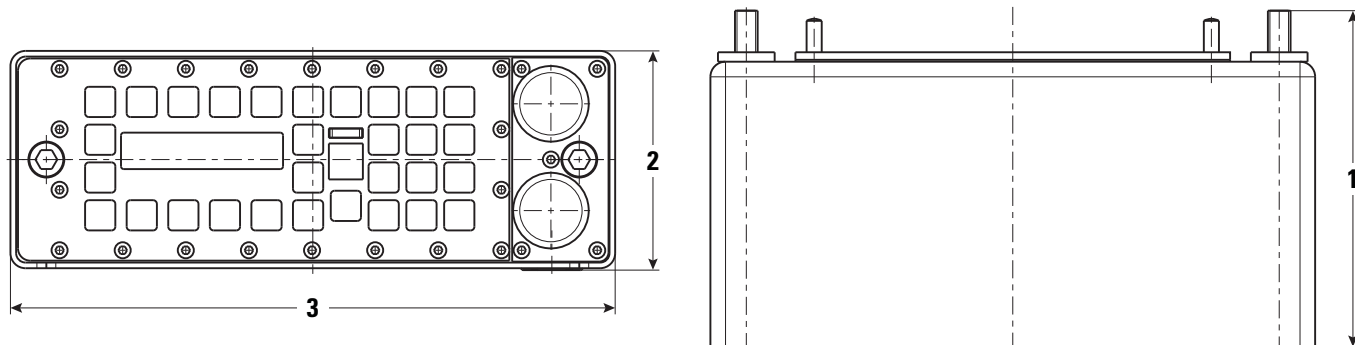
Electrical Data

Parameter	Typical Value	Maximum Ratings
Supply Voltage	12 V DC	9.5 V – 13.2 V
Supply Current	1 A	2 A

Environmental Data

Parameter	Symbol	Typical Value	Maximum Ratings
Temperature	T _{amb}	20° C (68° F)	–20° C – +40° C (–4° F – +140° F)

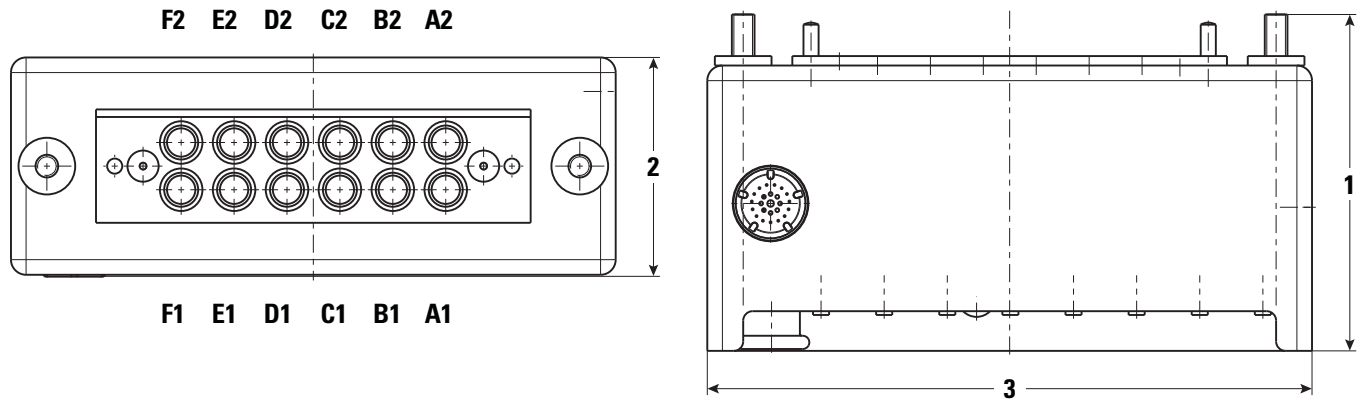
Front View of the PMC-R



Dimensions (All dimensions are approximate.)

1 Width	178 mm	7.01 in
2 Height	116 mm	4.57 in
3 Length	320 mm	12.60 in

Rear Side View of the PMC-R



Dimensions (All dimensions are approximate.)

1 Width	178 mm	7.01 in
2 Height	116 mm	4.57 in
3 Length	320 mm	12.60 in

Pin Assignment of PMC-R Plug-type Connections (Possible pin assignment configurations.)

A2		B2		C2		D2		E2		F2	
Pin 3 TX	Pin 4 SGND	Pin 3 TX	Pin 4 SGND	Pin 3 TX	Pin 4 SGND	Pin 3 TX Namur +	Pin 4 SGND	Pin 3 TX VGND Namur +	Pin 4 VGND	Pin 3 TX VGND	Pin 4 VGND
Pin 2 RX 0 – 1 mA 0.5 – 4.5 V	Pin 1 12 V	Pin 2 RX 0 – 1 mA 0.5 – 4.5 V	Pin 1 12 V	Pin 2 RX 0 – 1 mA 0.5 – 4.5 V	Pin 1 12 V	Pin 2 RX Namur – 0 – 1 mA 0.5 – 4.5 V 0 – 20 mA	Pin 1 12 V	Pin 2 RX Namur – 0 – 1 mA 0.5 – 4.5 V	Pin 1 12 V	Pin 2 RX	Pin 1 12 V
A1 (BIDI)		B1		C1		D1		E1		F1 (BIDI)	
Pin 3 RX	Pin 4 GND	Pin 3 TX	Pin 4 SGND	Pin 3 TX	Pin 4 SGND	Pin 3 TX Namur +	Pin 4 SGND	Pin 3 TX VGND Namur +	Pin 4 VGND	Pin 3 TX	Pin 4 GND
Pin 2 TX	Pin 1 12 V	Pin 2 RX 0 – 1 mA 0.5 – 4.5 V	Pin 1 12 V	Pin 2 RX 0 – 1 mA 0.5 – 4.5 V	Pin 1 12 V	Pin 2 RX Namur – 0 – 1 mA 0.5 – 4.5 V 0 – 20 mA	Pin 1 12 V	Pin 2 RX Namur – 0 – 1 mA 0.5 – 4.5 V	Pin 1 12 V	Pin 2 RX	Pin 1 12 V

SGND: Switched GND for sensors/external devices

VGND: Switched GND for valve control

RX: Receive serial communication

Namur +: Namur sensor supply

Namur -: Namur sensor input

GND: Ground (power supply)

TX: Send serial communication

BIDI: Bidirectional Interface

0 – 20 mA

0 – 1 mA

12 V

A1, F1

A2, D1, D2

B1, B2, C1, C2

E1, E2, F2

Current input

Current input (0.2 – 1 mA)

Voltage (+12 V DC)

Power supply

200 mA, group can be switched off via Pin 1

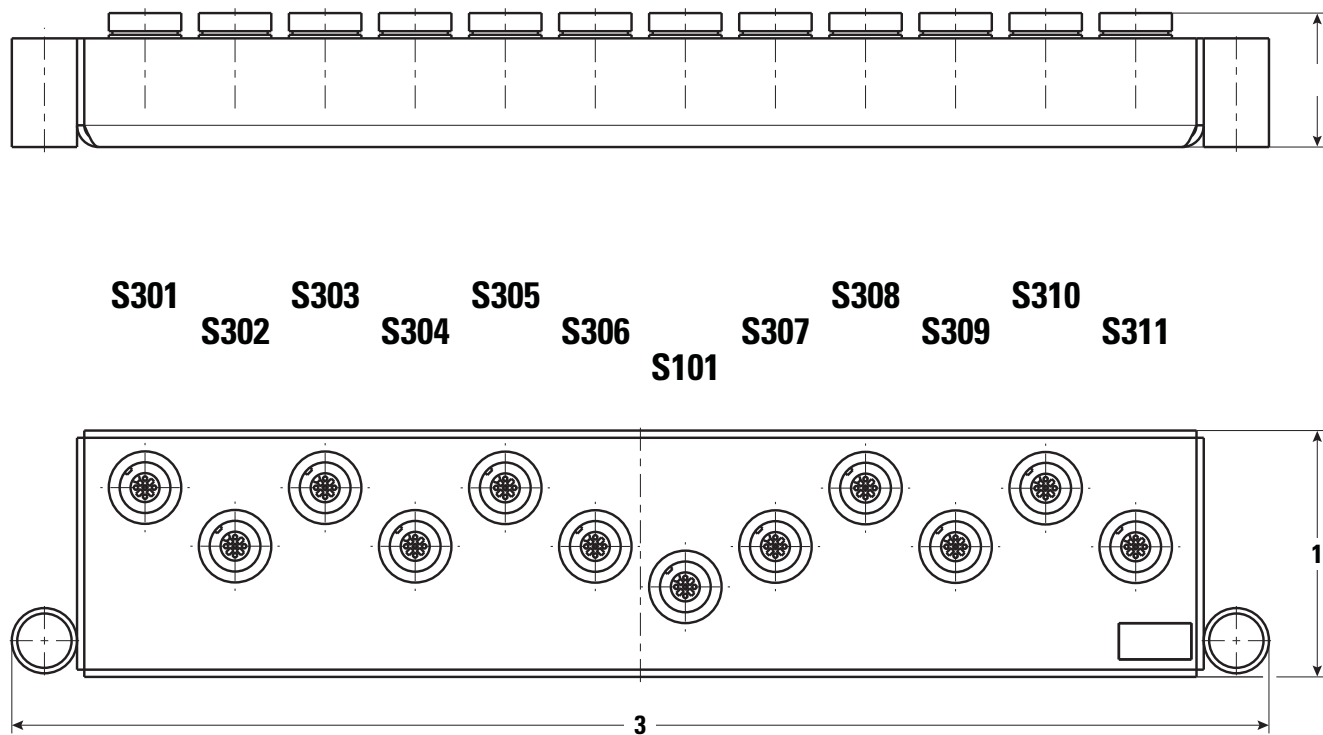
60 mA

1000 mA, group can be deactivated via Pin 1, voltage is additionally switched off with emergency stop and/or support lock-out switch switched off.

PMC-R Roof Support Control

Solenoid Driver Module

- The PMC-R solenoid driver module is placed at a distance from the PMC-R in accordance with the modular concept.
- The solenoid driver module can activate up to 22 valve functions, additional lights and sound modules or relays.
As well, additional sensors could be read in by the solenoid driver module.
- All connectors OS4 type



Dimensions (All dimensions are approximate.)

1 Width	68 mm	2.68 in
2 Height	37 mm	1.46 in
3 Length	347 mm	13.66 in

Pin Assignment of Solenoid Driver Module Type SD1

Socket	Pin 1	Pin 2 (Solenoid 1)	Pin 3 (Solenoid 2)	Pin 4
S301-S306	12 V	GND1	GND2	GND
S101	12 V	TX	RX	
S307-S311	12 V	GND1	GND2	0 – 1 mA 0.5 – 4.5 V

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