Allen-Bradley 80190-560-01-R

01 Position in the 18-pulse control chain

Allen-Bradley 80190-560-01-R is the analog control board for an 18-pulse PowerFlex 7000 ForGe drive. It connects drive feedback, analog process signals and external control interfaces to the drive control assembly.

18-pulse feedback harnesses	**ACB signal interfaces**	**Drive processor assembly**	**IFM and plant circuits**

Rectifier-specific feedback

In a compatible ForGe assembly, the ACB receives internal current and voltage feedback and routes external control-level signals. Line-current connectors J2, J3 and J4 correspond to separate CT groups; motor-current, DC-link and ground-fault paths use different connectors. These assignments must remain tied to the installed electrical drawings when an 18-pulse board is replaced.

Plant signal circuits

Customer analog circuits reach the board through the Interface Module. The isolated receiver channels accept independently selected current or voltage inputs, whereas the non-isolated process outputs share drive analog ground. Input mode, loop burden and the receiving instrument reference therefore determine whether a correctly wired signal will also measure correctly.

Control assembly boundary

The ACB also supports communication connections, power-supply monitoring and the mechanical stack carrying the drive processor and encoder interface. Its D7 and D9 indicators describe particular supply conditions, not complete channel or system health. Following replacement, restore connector identity and validate both low-voltage control functions and the authorized drive-level test sequence.

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02 Analog circuit budgets

Rectifier configuration	18-pulse
Isolated process inputs	3
Process input selections	−10/0/+10 V or 4–20 mA, individually configurable
Voltage-input impedance	75 kΩ
Current-input impedance	100 Ω
Required receiver compliance	At least 2 V at 20 mA, excluding external circuit drop
Individual input isolation	±100 V DC or 70 V RMS AC
Isolated process output	1 × 4–20 mA
Output loop compliance	12.5 V
Maximum receiver resistance	625 Ω at 20 mA; include external loop resistance
Non-isolated process outputs	4 × −10/0/+10 V
Minimum voltage-output load	600 Ω
Voltage-output reference	Drive AGND

Current-loop budget

At 20 mA, each additional 50 Ω consumes another 1 V of compliance. The 625 Ω maximum receiver figure cannot be allocated to the receiver alone if appreciable cable or series-device resistance is present.

Voltage-source loading

Input impedance matters even when the signal range is correct. A low-impedance test source can conceal the voltage divider created by a real transmitter with substantial output resistance.

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03 Feedback and diagnostic interfaces

Analog IFM connection	ACB J8
Line-current connector groups	J2: CT2U/CT2W; J3: CT3U/CT3W; J4: CT4U/CT4W
Motor-current connector	J5: HECSU/HECSW
DC-link current connector	J6: HECSDC1/HECSDC2
Air-pressure connector	J9: AP0/AP1
DPI interface connector	J16
XIO link connector	J22, CAN interface
Power LED D7	+5 V present
Power LED D9	±15 V OK

Output reference design

The voltage outputs can drive a 600 Ω minimum load, but load capability and galvanic isolation are separate requirements. External routing requires the isolation arrangement specified for the frame.

Evidence from indicators

Supply LEDs are useful checkpoints in a fault tree. Combine them with the correct common, connector continuity and channel tests before replacing a board for a symptom originating elsewhere.

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04 Integration decisions and fault separation

Can a 500 Ω receiver and 150 Ω cable loop be driven at 20 mA by 80190-560-01-R?

The combined 650 Ω would require 13 V at 20 mA, exceeding the 12.5 V compliance of the described ForGe output. Reduce loop resistance or use suitable conditioning, then verify the high-end value under the real connected load.

Why can a 4–20 mA source work on a calibrator but fail at the 80190-560-01-R input?

The 100 Ω current input needs 2 V at 20 mA before cable and other series drops are included. Check transmitter compliance with the complete circuit connected, not only the unloaded source or a lower-burden calibrator.

What error can a 5 kΩ voltage-source resistance introduce at 80190-560-01-R?

With the 75 kΩ voltage-input impedance, a simple source divider passes 75/(75+5), or 93.75%, of the source voltage. That is 6.25% attenuation under this stated example; compare unloaded and connected voltages or provide a suitable buffer.

Why should a remote recorder connected to 80190-560-01-R voltage outputs use isolation?

Those process outputs reference drive AGND. The ForGe instructions require isolation when they drive outside the frame enclosure. Verify the recorder reference and cable route instead of assuming that isolation of the input channels also applies to these outputs.

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05 Application boundaries and retained evidence

18-pulse control servicing

Restore the correct rectifier-specific ACB in an existing ForGe drive while retaining the installed line-feedback assignments.

Plant analog integration

Interface supported process transmitter and receiver circuits through the IFM with matching current or voltage settings and a checked loop budget.

Drive feedback diagnosis

Trace line, motor, DC-link and ground-fault channels separately when comparing physical signals with control observations.

Control-cabinet communications

Maintain the documented terminal, DPI and XIO connections as part of the complete drive assembly; the ACB is not a standalone network controller.

Technical applicability

80190-560-01-R is the 18-pulse ACB spare. Interface values describe the ForGe ACB in a compatible B Frame installation; confirm the installed frame, board revision, IFM and electrical drawings. They are not medium-voltage input ratings.

Rockwell Automation PowerFlex 7000 Troubleshooting Guide, 7000-TG002L-EN-P; B Frame ForGe Control User Manual, 7000-UM151I-EN-P

Automation references

Emerson KJ2005X1-BK1 12P4688X052 SE3007

Foxboro P0922YU FPS400-24

Honeywell CC-PCNT02 51454551-275

Separate references; no substitution or compatibility is implied.