

MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

SIEMENS SIMATIC S7

6ES7157-0AD82-0XA0

DP/PA OR FIELDBUS COUPLER

Applicable product family: SIMATIC distributed I/O networks

OFFICIAL SOURCE

6ES7157-0AD82-0XA0 6ES7 157-0AD82-0XA0.pdf

The following pages are selected from the supplied manufacturer document and retain their original page content.

DP/PA coupler Ex [ia] ,
6ES7 157-0AD82-0XA0 ,
as of product state 1 A5E00237840-01

Product Information Leaflet
This product information leaflet contains important information about the DP/PA coupler.

- Further information**
Further information about the module is provided in the
- manual DP/PA Bus Coupler, 6ES7 157-0AA00-8BA0.
 - manual Automation Systems Principles of Intrinsically-Safe Design (A5E00206201-01).
 - Informations regarding FM Approval and corresponding notes for commissioning is contained in FM-Approval Intrinsic Safety Control Drawing (A5E00237843-01).
 - Internet: <http://www.ad.siemens.de/support>

Manufacturing site
Siemens AG, Bereich A&D, Werner-von-Siemens-Str. 50
D-92224 Amberg

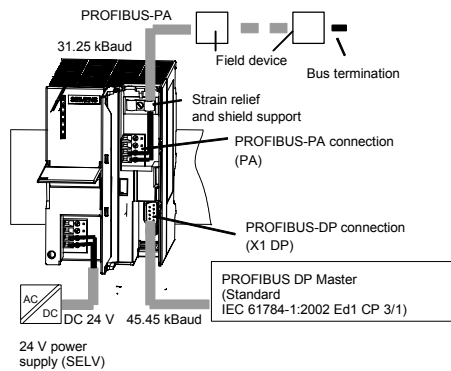
Certification II 3 G (1) GD EEx nA [ia] IIC T4 CE 0344

Note
The DP/PA coupler with II 3G (1) GD EEx nA [ia] IIC T4 certification can be used as a PROFIBUS of device category 3G inside zone 2 hazardous areas. Intrinsically safe electrical apparatus of device categories 1G, 2G and 3G for zones 0, 1 and 2; as well as of device categories 1D, 2D and 3D for zone 20, 21, and 22 may be connected.

Maintenance
The module is maintenance-free. In the event of need for repair, the module must be sent to the place of manufacture. No repairs may be carried out anywhere else.

- Installation**
- The DP/PA coupler should be installed inside the hazardous area (zone 2) in a suitable housing that provides at least IP 54 protection in accordance with EN 60529. The ambient conditions also have to be taken into account. There must be a manufacturer's declaration for zone 2 available for the housing (in accordance with EN 50021).
 - If a temperature of > 70 °C is reached in the cable or at the cable entry of this housing under operating conditions, or if a temperature of > 80 °C can be reached at the junction of the conductors under operating conditions, the temperature-related properties of the cables must correspond to the temperatures actually measured.

- Commissioning**
- Only power supply units of the SELV type with safe electrically separated functional extra-low voltage (≤ 60 V DC) may be used for the 24 V power supply of the DP/PA coupler Ex [ia]. The DP/PA coupler Ex [ia] and all modules/devices connected via the non-intrinsically safe PROFIBUS-DP must be supplied from SELV power supplies.
 - Steps must be taken to ensure that the rated voltage through transients cannot be exceeded by more than 40 %.
 - Only field devices conforming to the FISCO model may be connected to the PROFIBUS-PA.
 - As the interconnecting cable for PROFIBUS-PA you should use: PROFIBUS-PA interconnecting cable (blue), 6XV1 830-5AH10.



DP interface of the DP/PA coupler
The DP interface of the DP/PA coupler is also active in ongoing operation with the IM 157.
The DP interface is approved for "eavesdropping" on the PROFIBUS-PA, i.e. the bus monitor, in this operating mode. The use of a parameterization tool respectively the connection and operation of additional distributed I/O Devices is not permitted!

Technical Data

Certification	
CENELEC	
Type of protection:	Intrinsic Safety according to EN 50020
6ES7 157-0AD82-0XA0	II 3 G (1) GD EEx nA [ia] IIC T4
Test number:	KEMA 03 ATEX 1416 X
Factory Mutual (FM)	see Intrinsic Safety
Underwriters Laboratories (UL)	Control Drawing A5E00237843-01
Voltages, currents, potentials	
Nominal supply voltage of DP/PA coupler	DC 24 V
• Reverse polarity protection	yes
• Power failure buffering	min. 5 ms
PA Interface	
• Output voltage	typically DC 13.5 V
• Output current	max. 110 mA
Electrical isolation of 24 V power supply	
• to PROFIBUS-DP	yes
• to PROFIBUS-PA	yes
Insulation tested with	AC 500 V
Current input to DP/PA coupler (24 V DC)	max. 450 mA
Power loss of module	typ. 7 W
Safety data	
• $U_o = V_{OC} = 15 \text{ V}$	
• $I_o = I_{SC} = 247 \text{ mA}$	
• $P_o = 1,95 \text{ W}$	
• $U_m = AC 250 \text{ V}_{rms}$	
• $T_a = -25 \text{ bis } +60 \text{ °C}$	
Connectable connectors (PA)	
• R'	15 to 150 Ω/ km
• L'	0,4 to 1 mH/ km
• C'	80 to 200 nF/ km
• Length	max. 1000 m; for safety reasons (explosion protection)
i. e. 6XV1 830-5EH10	
Data for connectors (PA)	
• C ≤ 2.2 μF	i. e. 6GK1 905-0AD00
• R = 90 ... 100 Ω	
• L ≤ 10 μH	
Data for selecting PA field devices	
• Connection to DP/PA coupler	• field devices with certification for PROFIBUS PA
	• up to 31 PA field devices can be connected
Certification data of the PA field devices must conform to the safety requirements specifications of the DP/PA coupler:	
• $L_i < 10 \text{ μH}$	
• $C_i < 5 \text{ nF}$	
• $U_i \geq 15 \text{ V}$	
• $I_i \geq 247 \text{ mA}$	
• $P_i \geq 1.95 \text{ W}$	

Note:
The Ex [ia] DP/PA coupler for explosive environments, 6ES7 157-0AD82-0XA0, provides a higher safety related value for the spec I_o (247 mA instead of 215 mA) in comparison to the DP/PA coupler Ex [i] 6ES7 157-0AD00-0XA0. Please observe that the Ex [ia] 6ES7 157-0AD82-0XA0 DP/PA coupler can therefore only be used in connection with field devices delivering a maximum input current of $I_i \geq 247 \text{ mA}$. Also refer to data regarding the selection of PA field devices. It is possible that "older" field devices, or respectively systems, with the DP/PA coupler Ex [i] 6ES7 157-0AD00-0XA0 are only certified for a maximum current of 215 mA. In such instances please consult your Siemens representative or SIMATIC customer support.