



# PROFIBUS Commissioning and Maintenance Training Course

*A one-day course designed as an add-on to the Certified PROFIBUS Installer Course covering the practical techniques of fault finding on “operational” PROFIBUS networks.*

## Who is this course aimed at?

The one-day Certified PROFIBUS Installer Course gives an excellent introduction to PROFIBUS technology and how to properly layout and install networks. The verification and fault-finding methods taught are however generally limited to non-operational networks and static testing.

The 4/5-day Certified PROFIBUS Engineer Course covers the full in-depth theory and practice of PROFIBUS operation and fault-finding. Although it is desirable to have one or two fully qualified PROFIBUS Engineers, it is by no means essential that all maintenance personnel be so highly trained.

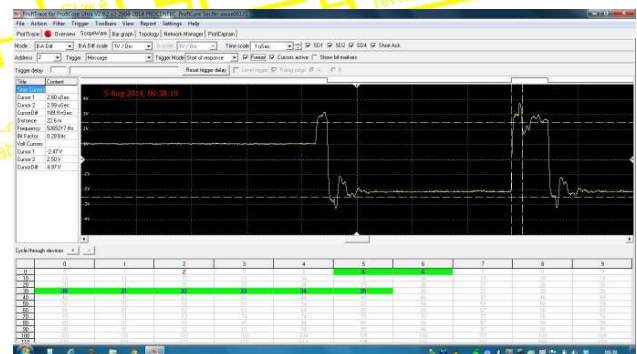
The PROFIBUS Commissioning and Maintenance course provides an intermediate level of training for technicians and engineers who are involved with commissioning, health checking and fault finding on operational PROFIBUS systems.

## What does the course cover?

This is a practical course based around a working PROFIBUS network. Each pair of students has a rack of devices and laptop with ProfiTrace Ultra for PROFIBUS device exercising and fault-finding.

Techniques taught on the course include the use of ProfiTrace Ultra to diagnose and locate network faults, device faults and I/O problems. Students also learn how to use the built-in digital storage oscilloscope to diagnose and locate a wide range of cable, connection and device faults.

The course covers how to health check a working PROFIBUS system and quickly troubleshoot and locate problems. The course is very practical, based on hands-on exercises using a working system on which faults can be systematically introduced.



Info panel

Function: SD2 message  
Destination address: 12  
Frame type: Response message  
PROFIBUS DPV3 Message:  
Slave\_Diag\_Con  
Slave\_Diag\_Bit  
Slave\_Diag\_Bit  
Master\_Addr\_1  
Index\_Number (0-63) (hex)  
Extended diagnostic (32 bytes)  
Content 3 diagnostic blocks  
Block 0: Identifier related (8 bytes)  
Block 1: Device related (20 bytes)  
Block 2: Diagnostic related (3 bytes)  
Block 3: Channel 0: Input  
Type 0A  
Error Short circuit  
Address diagnostic info (defined in GSD)

Frame Nr.	Time stamp	Action	Frame	Addr	Device	Req type	Req/Res ID
54465	6969.35 ms	SD2	1->30	SD2	SD2_302000	Data Exchange	Req
54466	6969.38 ms	SD2	1->30	SD2	SD2_302000	Data Exchange	Req
54467	6969.38 ms	SD2	1->31	SD2	SD2_302000	Data Exchange	Req
54468	6969.47 ms	SD2	1->31	SD2	SD2_302000	Data Exchange	Req
54469	6969.67 ms	SD2	1->32	SD2	SD2_302000	Data Exchange	Req
54470	6969.66 ms	SD2	1->32	SD2	SD2_302000	Data Exchange	Req
54471	6969.77 ms	SD2	1->33	SD2	SD2_302000	Data Exchange	Req
54472	6969.86 ms	ACK		SD1	SD1_302000	Short acknowledge	Req
54473	6969.89 ms	SD2	1->34	SD2	SD2_302000	Data Exchange	Req
54474	6969.94 ms	SD2	1->34	SD2	SD2_302000	Data Exchange	Req
54475	6970.04 ms	SD2	1->40	SD2	SD2_302000	Data Exchange	Req
54476	6970.17 ms	ACK		SD1	SD1_302000	Short acknowledge	Req
54477	6970.20 ms	SD2	1->41	SD2	SD2_302000	Data Exchange	Req
54478	6970.29 ms	SD2	1->41	SD2	SD2_302000	Data Exchange	Req
54479	6970.46 ms	SD2	1->42	SD2	SD2_302000	Data Exchange	Req
54480	6970.65 ms	SD2	1->42	SD2	SD2_302000	Data Exchange	Req
54481	6970.66 ms	SD2	1->43	SD2	SD2_302000	Data Exchange	Req
54482	6970.76 ms	SD2	1->43	SD2	SD2_302000	Data Exchange	Req
54483	6970.89 ms	SD2	1->44	SD2	SD2_302000	Data Exchange	Req
54484	6970.94 ms	SD2	1->44	SD2	SD2_302000	Data Exchange	Req
54485	6971.06 ms	SD2	1->13	SD2	SD2_302000	Data Exchange	Req
54486	6971.13 ms	SD2	1->13	SD2	SD2_302000	Data Exchange	Req
54487	6971.13 ms	SD2	1->13	SD2	SD2_302000	Data Exchange	Req
54488	6971.66 ms	SD2	1->91	SD2	SD2_302000	Data Exchange	Req
54489	6971.72 ms	SD2	1->91	SD2	SD2_302000	Data Exchange	Req

## Why must I do the Installer Course first?

The Maintenance Course teaches how to find and locate faults in working PROFIBUS systems; however the technician must have a good understanding of the types of faults that can occur and their causes. The Certified PROFIBUS Installer Course provides the basic grounding which is essential to understanding the more advanced techniques covered in this course.

The course is available for on-site delivery and at selected locations around the country for up to 12 people. The course can also be delivered overseas providing a cost effective alternative to sending staff to the UK.



# PROFIBUS Commissioning and Maintenance Training Course



Maintenance training in Scotland



Training in Australia

As an optional addition to the on-site training, we can offer half a day of on-plant training for the engineers who take the Installer and Maintenance Course. This can involve supervised checking of a working system at the customer's site.

Note that responsibility for plant production and personnel safety will remain the responsibility of the Company should this option be chosen. Please see the conditions of supply at our web site.

## Course options

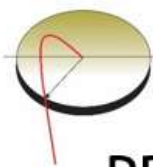
Because this course is not certified or accredited by PROFIBUS and PROFINET International (PI), the syllabus can be altered and optimised to meet your exact requirements.

For example many companies in the manufacturing sector only use DP devices, so we can drop the PA material and concentrate more on the DP techniques that will be of use to you. On the other hand some companies in the process sector use mainly PA devices and really require to be able to diagnose problems on the PA cable and use PA specific tools such as PA Class-2 masters and engineering tools.

When the course is open rather than being company specific, we deliver a balanced course which covers both DP and PA technology. We teach how to use ProfiTrace (a modern and very flexible analyser, fault-finding and health-checking tool) on DA and PA systems. We teach how the built-in oscilloscope can be used not only to diagnose problems, but also to locate the fault along the cable

## A sample of comments from previous attendees

- "Very practical course, I am sure the techniques that were taught will be useful."
- "All I've got to do now is convince my company to buy me a ProfiTrace kit!"
- "The course was excellent, you are a great teacher Andy"
- "Thank you. Our engineering team have really benefitted from your experience and teaching"
- "Great course, the extra half-day on our plant was the icing on the cake."



Control Specialists Ltd



# PROFIBUS Commissioning and Maintenance Training Course

**Booking Information – for dates, costs and booking information, please contact:**



**Control Specialists Ltd**

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Control Specialists Ltd are a PROFIBUS and PROFINET International Training Centre (PITC) who also provide site-based support on PROFIBUS networks. They also provide training and support on PROFINET, AS-I and CAN and EMC

Peter Thomas of Control Specialists Ltd is the technical officer of PI UK and chairman of the PITC working group which, amongst other things, is responsible for defining the learning outcomes of PI-certified training courses.



Endress+Hauser training centre in Manchester