

A PI-Certified Competency and Training Center

PROFIBUS Commissioning & Maintenance



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.



Framestructure: SD2 message Source address: 13	Setup Search Search	h Up Search Down					
Destination address: 1	FrameEr Timestam	Attention	Frame	Addr	Service	Hsg type	Req/Res SA
Frametype: Response message	54465 6260.33	5 ms	SDZ	1->30	SED HIGH	Data Exchange	Reg
PROFIBUS DPV0 Message:	54466 6968.8	nr C	SD2	1<-30	DL	Data Exchange	Des
Slave Diag Con	54467 6969.31	3 ns	SDS	1->31	SED HIGH	Data Exchange	Reg
Status bits:	54460 6969.4	7 ms	SD2	1<-91	DL	Data Exchange	Res
Ext_diag_Bit	84469 6969.5	7 ms	SD2	1->32	SED HICH	Data Exchange	Reg
Watchdog-on	54470 6969.66	5 ms	SDS	1<-32	DL	Pata Exchange	Res
Master_Add: 1 Ident Number 806A (hex)	54471 6969.7	7 16 17	SDZ	1->33	SED HIGH	Data Exchange	Req
Extended diagnostics: (32 bytes)	54472 6969.86	5 ms	ACK			Short acknowledge	Res
Contains 3 diagnostic blocks	54473 6969.81	ns .	gp1	1->34	SED HIGH	Data Exchange	Reg
Block 0: Identifier related (9 bytes)	54474 6969.94	as as	SDZ	1<-34	DL	Data Exchange	Des
49 08 00 00 00 00 00 00	84478 6970.0	i nr	SD2	1->40	SED HICH	Pata Exchange	Deg
00	84476 6970.13	7 ms	ACK			Short acknowledge	Res
Module 3 has diagnostics	54477 6970.20	ns car	SDZ	1->41	SED HIGH	Data Exchange	Req
Block 1: Device related (20 bytes) 14 92 00 00 00 00 00 00	54478 6970.25	ns ns	SD2	1<-41	DL	Data Exchange	Des
00 00 00 00 00 00 00 00	54479 6970.46	5 hs	SDS	1->42	SED HIGH	Data Exchange	Reg
00 00 00 00	54480 6970.55	na c	SD2	14-42	DL	Data Exchange	De m
Block 2: Channel related (3 bytes)	84481 6970.66	5 ms	SD2	1->43	SED HIGH	Data Exchange	Reg
83 40 21	54492 6970.76	as as	SD2	14-49	DL	Data Exchange	Res
Module 3, channel 0, input	54403 6970.00	ne c	SD1	1->44	SED HIGH	Data Exchange	Req
Type:Bit Error Short circuit	54484 6970.94	ns	SDS	1<-44	DL	Pata Exchange	Res
Error: Short circuit	54495 6971.0		gD2	1->13	SED WICH	uet Diagnostics	93
Additional displacements into (defined in	54486 6971.13	ns ns	BDZ	1443	DL	Get Diagnostics	Res 31
GSD	54487 6971.5	l ms	SD-4	1->1	Teken pass	Pass token	
	54488 6971.56	s as	SD1	1->91	FDL Status		Reg
	54489 6971.72		SD-4	1->1	Token pass	Pass token	

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 or alternatively in an online format.



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Maintenance training in Scotland

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.



Training in Australia

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

Available Online

Although this course is usually delivered in a conventional face-to-face format, it also offered online, but you will need a PC / Laptop with a webcam / microphone and a reliable internet connection.

Online Course Content (Theory): The course is delivered using pre-recorded video sessions that you are given access to for an agreed time period, usually one week. You will also be given a .pdf copy of the course notes for reference purposes during the course and.

Online Course Content (Practical): This is given in a live / instructor-led format where you will have remote access to the Profitrace PROFIBUS analyser on a laptop connected to a live PROFIBUS network consisting of DP and PA slaves, diagnostic hubs and permanent monitors. The practical session lasts for 4 hours and you will have plenty of opportunity to ask questions.





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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.

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