

The Fujitsu logo, consisting of the word "FUJITSU" in a red, serif font with a stylized infinity symbol above the letter 'J'.

**FUJITSU**

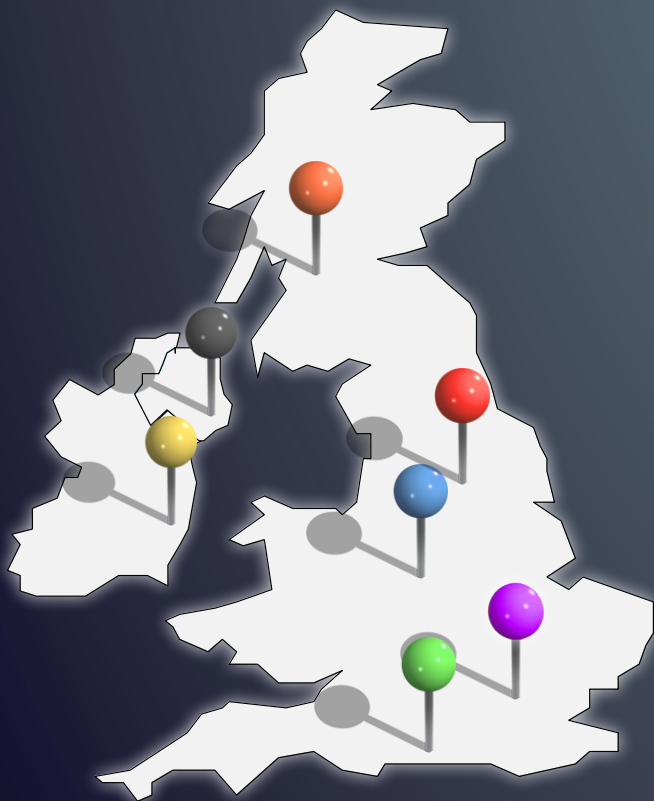
AIR CONDITIONING





A photograph of a training room. In the foreground, there are several long, dark grey tables with red chairs. In the background, there are several white Fujitsu air conditioning units mounted on the wall. A large black diagonal shape is overlaid on the left side of the image, containing the text.

Welcome to the world of  
**FUJITSU**  
**TRAINING**  
2019/20

**FUJITSU GENERAL AIR CONDITIONING (UK)**

# Fujitsu Training Course Locations



-  Glasgow
-  Belfast
-  Dublin
-  Leeds

-  Midlands
-  London
-  Eastleigh

At Fujitsu we believe the best approach to training is to be trained by experienced field engineers that have many years in both, industry and product knowledge. We also believe working on installed and operational systems to be the best way to learn. Our practical exercises allows the engineer to develop their installation and commissioning skills, and, diagnosing faults by working on operational systems.

Our software design courses are presented by one of our own inhouse specifications engineers. We encourage our customers to bring along their own PC and a project, so at the end of the day the customer would have installed the design and selection software, and have documents ready to provide to their customers.

Our nationwide training centres are continually being updated to include the latest technology found in the market today. All our training centres have systems that have been professionally installed and are fully operational.

Our Training Centres include the following equipment:

- Mini, Midi & Maxi VRF
- Heat Recovery VRF
- DX Solutions
- Splits & Multi-Splits
- R32 Products
- Design & Service Software
- Central & BMS Controls
- Heat Recovery Ventilation

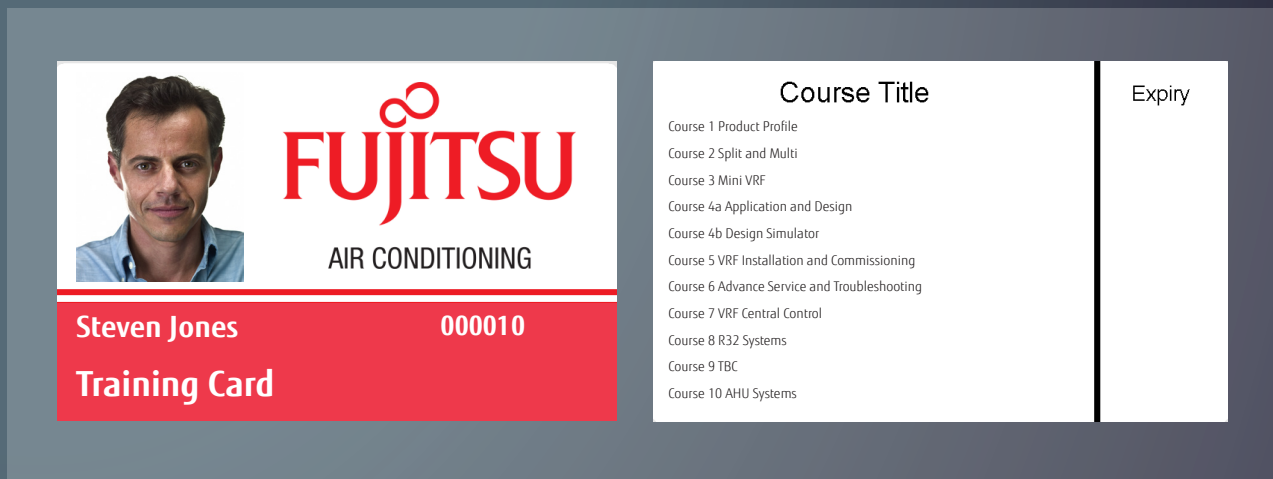
We fully understand that having engineers off the road to attend training can be costly to your business, but on the other hand it is essential. With the correct installation, service, and maintenance training, your customers will have an efficient and reliable product.

We have designed our courses and selected our training centres with the customer in mind, they are easy to access from either the motorway network or public transport, and, are all completed in a single day, with an option to attend consecutive days to complete 2 or 3 courses in as many days.

Please contact us for more information on training courses, locations, nearby hotels, parking and public transport.

# TRAINING CARD

Each candidate attending their first training course of the 2019/20 season will receive a training card. The training card will provided details of courses completed.



On successful completion of the training course the candidate will receive an electronic copy of all technical and service manuals, a copy of the training presentation and, when four training courses have been completed, a Amazon voucher and a Fujitsu T-Shirt.

You will find a wide range of Fujitsu branded products available by visiting our NEW online store <https://www.fujitsu-general.com/uk/> including, coats, bags, hats and much more.



To maintain the highest standards within our industry certain courses will require F-Gas certification. (see course details for further information).

All course are free of charge (excluding Advanced Courses) with lunch being provide on all full-day courses. (dietary requirements can be requested on the course application form).

Training courses are subject to availability. Failure to provide at least 48 hours notice to cancel a course may result in a cancellation fee.



# Fujitsu Training

We have developed specific courses, created to make you much more fluent in designing and installing Fujitsu air conditioning.

## Course 1 - Full Day

### An Introduction to the Fujitsu Product Portfolio

#### Course Objectives

To develop an understanding of the Fujitsu product range.

To educate the attendee on the importance of air conditioning, how air conditioning works and the benefits and advantages of the Fujitsu product.

#### Course Summary

Throughout this course the delegates will receive:

- Explanation on how to educate the end user of the benefits of air conditioning.
- A basic understanding of the primary functions of an air conditioner.
- An overview of the features and options on the Fujitsu models.
- Details on Fujitsu marketing and sales material.
- Training course information and a tour of our training rooms.
- How and when to select the correct system.
- Explanation on how to operate a system efficiently.
- Explanation of the different sophisticated control options.
- Design Simulator demonstration.
- Website demonstration.

## Course 2 - Full Day

### Split and Multi-Split System - Installation, Commissioning, Troubleshooting and Service Tool

#### Course Objectives

To develop an understanding of the Fujitsu Split Systems. To obtain sufficient knowledge to install, commission and troubleshoot these types of systems.

#### Course Summary

Throughout the course practical exercises will reinforce the learning process. The course will include:

- Introduction to the course objectives.
- Explanation of the terms and technologies (e.g. Inverters, double swing louvres etc).
- Review of refrigerant and electrical circuit diagrams and basic operation.
- Pipe work, interconnecting cable and control methods.
- Practical exercises (e.g. board and fan motor change).
- Remote controller types - functions, setting up, fault codes and Wi-Fi options.
- Fault finding - practical exercises.
- Introduction to the new fault finding application.

**Proof of Company F-Gas registration is required for this course.**

## Course 3 - Full Day

### Mini VRF - Installation, Commissioning and Troubleshooting

#### Course Objectives

To develop an understanding of the Fujitsu Advanced Mini VRF Systems. To obtain sufficient knowledge to install, commission and troubleshoot these types of systems.

#### Course Summary

Throughout the course practical exercises will reinforce the learning process. The course will include:

- Introduction to the course objectives.
- Explanation of the terms and technologies (e.g. inverters, double swing louvres etc).
- Review of refrigerant and electrical circuit diagrams and basic operation.
- Pipe work, interconnecting cable and control methods.
- Practical exercises (e.g. Special functions and commissioning procedure).
- Remote controller types - functions, setting up, fault codes and Wi-Fi options.
- Fault finding - introduction and practical exercises, including service tool demonstration.
- Introduction to the new fault finding application.

**Proof of Company F-Gas registration is required for this course.**

## Course 4a - Full Day / 4b - Half Day

NEW

### VRF System Application and Design Including Design Simulator

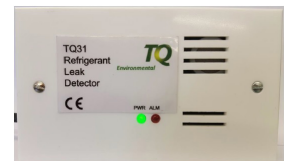
#### Course Objectives

To develop an understanding of the Fujitsu VRF Systems. To obtain sufficient knowledge for the application and design of this type of system for the both new build and refurbishment projects.

#### Course Summary

Throughout this course, with the use of extensive hands-on exercises, the delegates will:

- Understand the basic operation and features of a Fujitsu VRF System. (4a)
- Select indoor units and understand the features of each type of indoor unit. (4a/4b)
- Understand the features of the outdoor unit. (4a)
- Understand the limitations of the system. (4a)
- Calculate the system refrigerant charge. (4a/4b)
- Design the refrigerant pipe work. (4a/4b)
- Understand the system power supply requirements. (4a)
- Design the system control wiring and understand the system address setting Configuration. (4a/4b)
- Understand the control system options and the configuration of each. (4a/4b)
- Design a complete VRF system for an example building using Design Simulator. (4a/4b)
- Website demonstration. (4a)
- Gain sufficient knowledge on leak detection solutions and when there is a requirement with EN378. (4a)



## Course 5 - Full Day

### VRF System Installation, Commissioning and Service Tool

#### Course Objectives

To develop an understanding of the Fujitsu VRF Systems. To develop a basic understanding of the design methodology relevant to Fujitsu VRF Systems. To obtain sufficient knowledge to install and commission these type of systems

#### Course Summary

Throughout this course with the use of extensive hands-on training, the delegates will:

- Understand the limitations of the system.
- Understand the pipe work design.
- Calculate the system refrigerant charge.
- Understand the system power supply requirements.
- Design the system control wiring and understand the system address setting configuration.
- Understand the control systems options.
- Set-up the system address configuration of the outdoor and indoor units.
- Understand how to start-up the system and test run.
- Understand the recommended installation procedures.
- Learn how to set up and operate the Central Remote Controller.
- Learn how to avoid common mistakes.
- Introduction to the new fault finding application.

**Proof of Company F-Gas registration is required for this course.**



# Fujitsu Training

We are committed to training to help raise standards throughout the industry and have invested heavily in our state of the art training facilities.

## Course 6 - Full Day

## Advanced Course

### VRF Advanced Service and Troubleshooting including Service Tool

#### Course Objectives

To develop a thorough understanding of Fujitsu VRF Systems. To obtain specialist knowledge to commission and troubleshoot this type of VRF system using the Service Tool Software.

#### Course Summary

Throughout this course with the use of extensive hands-on training, the delegates will:

- Understand the limitations of the system.
- Calculate the system refrigerant charge.
- Understand standard service procedures (including oil recovery, pump-down etc.).
- Use the CRC and TTPC as fault-finding tools.
- Learn fault-finding procedures.
- Understand the meaning of system error codes and how to rectify them.
- Learn component fault finding techniques.
- Learn how to commission and troubleshoot the system using the Fujitsu Service Tool Software.
- Introduction to the new fault finding application.

**Cost: £125**

**Proof of Company F-Gas registration is required for this course.**

## Course 7 - Full Day

## Advanced Course

### VRF Central Controllers - Installation and Commissioning

#### Course Objectives

To develop a thorough understanding of Fujitsu VRF communication network and control options. To obtain specialist knowledge to install, commission and troubleshoot these types of VRF controllers, software and interfaces.

#### Course Summary

Throughout this course with the use of extensive hands-on training, the delegates will:

- Understand the limitations of the system and the control options.
- Install and commission Central Controllers (including software).
- Understand firmware and data transfer.
- Understand basic BMS contacts (e.g. Fire alarm and motion operation).
- Use the Central Controllers as a fault-finding tool.
- Learn fault-finding procedures and remote monitoring.
- Understand errors and error codes and how to rectify them.
- Introduction to the new fault finding application.

**Cost: £125**

## Course 8 - Half Day

### R32 - An Insight to R32, Including Installation, Commissioning and Troubleshooting



#### Course Objectives

To develop an understanding of the benefits of R32. To obtain sufficient knowledge about the differences between R410A and R32. Using the correct tools, installation methods, commissioning and troubleshooting procedures.

#### Course Summary

This course will include the following:

- An overview of R32.
- An understanding of the product and the benefits.
- Explanation of terms and technologies.
- Review of refrigerant and electrical circuit diagrams and basic operation.
- Pipe work, interconnecting cable and control methods.
- Practical exercises (e.g. Board and fan motor change).
- Remote controller types - WiFi, functions, setting up and fault codes.
- Fault finding - practical exercises.
- Website demonstration.
- Introduction to the fault finding application.

**Proof of Company F-Gas registration  
is required for this course.**

## Course 9 - Full Day

TBC

#### Course Objectives

TBC

#### Course Summary

TBC

## Course 10 - Full Day

### AHU DX Kit and Freeverter options - Design, Installation and Commissioning

#### Course Objectives

To develop an understanding of the Fujitsu AHU options and control solutions. To obtain sufficient knowledge to install these types of systems.

#### Course Summary

Throughout this course with the use of extensive hands-on training, the delegates will:

- Selecting an AHU and the correct DX Kit.
- Installing DX Kit and Freeverter.
- Configuration.
- Control options, including external controls and BMS solutions.
- Commissioning.

# Fujitsu Training Request Form

To book a place on a Fujitsu training course, please photocopy and complete this form.

Return your request form/s to the Fujitsu Training Department:

Fujitsu Air Conditioning (UK) Limited, Unit 150, Centennial Park, Centennial Avenue, Elstree, Hertfordshire, WD6 3SG  
Tel: +44 (0)208 731 3450, Email: training@fgac.fujitsu-general.com

**A current Company F-Gas certificate, must be recieved prior to the confirmed training date for courses 2, 3, 5 and 6.**

Please complete one request form per delegate for each course required. All forms must be fully completed in capital letters. Incomplete forms will not be accepted.

London <input type="checkbox"/>	Leeds <input type="checkbox"/>	Glasgow <input type="checkbox"/>	Belfast <input type="checkbox"/>	Dublin <input type="checkbox"/>	Eastleigh <input type="checkbox"/>	Dudley <input type="checkbox"/>
Delegate Name.			Course No.			
Company Name.			Preferred Course Date(s).			
Position/Title.			Special Dietary Requirements.			
Full Company Address.						
						Postcode.
Telephone.			Fax.			
Email.						

There is no cost for our standard training courses, but a £150 charge will be levied upon each delegate for failure to attend booked courses or cancellations with less than 2 working days notice.\* Advanced course bookings must be accompanied with a PO for the value of the course indicated on the course detail page.

Please tick as appropriate

<input type="checkbox"/> Comfort Club Member	Comfort Club Membership No. ....
<input type="checkbox"/> Comfort Club Non-Member	F-Gas Registered Company No. ....
<input type="checkbox"/> MCS Registered	MCS Registration No. ....

\* Signature and submission of this training request confirms that you accept fully that Fujitsu Air Conditioning (UK) Limited will levy the £150 in the event of non-attendance.

Print Full Name.	Position/Title.
Signature.	Date.

Fujitsu Air Conditioning (UK) Limited reserves the right to cancel or postpone training courses. In the case of cancellation or postponement our training department will accommodate your original request at the earliest possible opportunity.



# 2019-20 TRAINING CALENDAR

The following dates are available at our training centres. If your preferred course, date or training centre is not shown please contact us to book a course at your nearest centre.

	September 2019	October 2019	November 2019	December 2019	January 2020	February 2020	March 2020	April 2020	May 2020
1		2						2	
2		3						8	
3	2	8		2			2		
4	3			3		2	3		
5	8		2	4b		3	5		3
6			3			8			5
7			8		2			5	6
8		4b			3			6	
9		5			8			10	
10	5	6		5			2		
11	6			6		2	3		
12	10		2	8		8	8		2
13			5			4b			3
14			6		2			2	8
15		2			5			3	
16		3			6			5	
17	2	5		2			10		
18	2			3		5	3		
19	3		3	5		2	5		4b
20			5			8			5
21			6		3			3	6
22		10			2			2	
23		2			3			8	
24	2	8							
25						5			
26			3						6
27	2								
28						5		2	
29			3						6
30									
31							2		

London Training Centre	Leeds Training Centre	Dudley College	Eastleigh College
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## Table Key Course Number

1  
2  
3  
4a  
4b  
5  
6  
7  
8  
9  
10

## Product Group

ALL  
SS,MS  
Mini VRF  
VRF  
VRF  
VRF  
VRF  
R32  
TBC  
AHU

## Course Title

An introduction to the Fujitsu Product Portfolio  
Split and Multi Split Systems - Installation, Commissioning and Troubleshooting  
Mini VRF - Installation, Commissioning and Troubleshooting  
Application and Design (Inc Design Simulator)  
Design Simulator (Software only)  
Installation and Commissioning  
Advanced Service and Troubleshooting (Inc Service Tool)  
VRF Central Controllers - Installation and Commissioning  
An insight into R32 - Installation, Commissioning, Troubleshooting  
TBC  
AHU DX Kit and Freeverter Options - Design, Installation and Commissioning

For more details on our training courses please contact Fujitsu General Air Conditioning (UK) on

Email: [training@fgac.fujitsu-general.com](mailto:training@fgac.fujitsu-general.com)

Phone: +44 (0)208 731 3450

Website: [www.fujitsu-general.com/uk](http://www.fujitsu-general.com/uk)

# R22 REPLACEMENT

## Pipe work re-use guidelines for Split Systems

Model	Liquid Pipe		1/4				3/8			1/2			5/8	Additional Charge
	Suction Pipe		3/8	1/2	5/8	3/4	1/2	5/8	3/4	5/8	3/4	1 1/8	1 1/8	
ASYG07-12LM														50g/m
ASYG07-12LU	S	20				8								
ASYG09-12LT		15				6								
ASYG14LM														50g/m
ASYG14LU	S	20			8	8								
ASYG18LF														50g/m
	S	25			10	10								
ASYG24LF														50g/m
	S	30			12	12								
ASYG30-36LM														90g/m
	S	50			20	20								
AUYG12LV														50g/m
ARYG12LL	S	25				10								
ARYG12LH		15				6								
ARYG12LS														
AUYG14-18LV														50g/m
ARYG14-18LL														
ARYG14-18LS	S	25				10	10							
ARYG14LH		15				6	6							
ABYG18LV														
AUXG18LR														50g/m
ARYG18LH	S	30				12	12							
AUYG24LV														50g/m
ARYG24LM														
ARYG24LH	S	30				12	12							
ABYG24LV														
AUXG24LR														
AUYG30-54LR (1~)														90g/m
AUXG30-54LR														
ARYG30-45LM (1~)														
ARYG45-54LH (1~)	S	50				20	20							
ARYG30-54LH		20				9	9							
ABYG30-45LR (1~)														
AUYG36-54LR (3~)														90g/m
ARYG36-45LM (3~)														
ARYG45-60LH (3~)	S	75				30	30							
ABYG36-54LR (3~)		30				10	10							
AOYG36-54LATT (3~)														90g/m
AOYG36-54LBTB (1~)	S	75				30	30							
ARYC72-90LH														170g/m
ARYG72-90LH	S	48				12								

S - Standard Pipe Size

Red - Maximum Pipe Length

Green - No Additional Charge up to this length

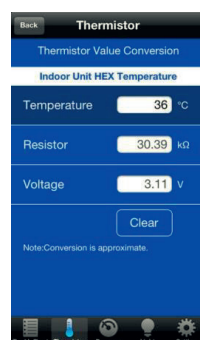
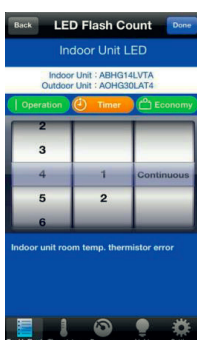
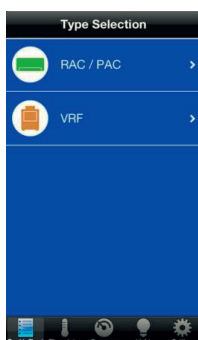
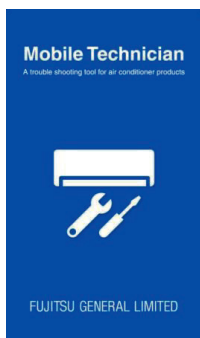
The above table refers to the only recognised R22 re-use combinations

Existing R22 pipe work can only be re-used if it is free from defect and contamination, insulated on both lines, and the existing R22 system can be operated for 30 minutes in cooling mode.

All systems should be installed in accordance with the manufactures guidelines  
Capacity and efficiency can be reduced when the STANDARD pipe sizes are not used.

# Mobile Technician App

By FUJITSU GENERAL LIMITED



Error Detail	Indoor LED Display Flashes			Wired RC
	Operation	Timer	Economy	
Serial communication error	1	1	Continuous	11
Wired RC communication error	1	2	Continuous	12
Network communication error	1	4	Continuous	14
Check run unfinished	1	5	Continuous	15
Transmission/Peripheral connect error	1	6	Continuous	16
Refrigeration circuit address setting error	2	1	Continuous	21
Indoor unit capacity error	2	2	Continuous	22
Combination error	2	3	Continuous	23
Connection unit number error	2	4	Continuous	24
Address setting error	2	6	Continuous	26
Master/Slave unit set-up error	2	7	Continuous	27
Connection unit number error in WRC circuit	2	9	Continuous	29
Power supply interruption error	3	1	Continuous	31
Indoor PCB EPPROM error	3	2	Continuous	32
Manual auto switch error	3	5	Continuous	35
Indoor unit WRC communication error	3	10	Continuous	3A
Inlet air temp sensor error	4	1	Continuous	41
Indoor Heat-Ex middle temp sensor error	4	2	Continuous	42
Indoor unit fan motor error	5	1	Continuous	51
Indoor EEV error	5	2	Continuous	52
Drain pump error	5	3	Continuous	53
Damper error	5	7	Continuous	57
Intake grille error	5	8	Continuous	58
Indoor unit error	5	15	Continuous	5U
Outdoor PCB/communication error	6	2	Continuous	62
Inverter error	6	3	Continuous	63
Active filter/PFC circuit error	6	4	Continuous	64
Trip terminal 'L' error	6	5	Continuous	65
Display PCB/communication error	6	10	Continuous	6A

Error Detail	Indoor LED Display Flashes			Wired RC
	Operation	Timer	Economy	
OU Discharge temp sensor error	7	1	Continuous	71
Compressor temp sensor error	7	2	Continuous	72
OU Heat-Ex liquid temp sensor error	7	3	Continuous	73
OU Ambient temp sensor error	7	4	Continuous	74
OU Suction ref temp sensor error	7	5	Continuous	75
2/3 way valve temp sensor error	7	6	Continuous	76
OU Heat sink temp sensor error	7	7	Continuous	77
Sub-cool inlet/outlet temp sensor error	8	2	Continuous	82
OU Liquid pipe temp sensor error	8	3	Continuous	83
OU current sensor error	8	4	Continuous	84
HP/LP pressure sensor/switch error	8	6	Continuous	86
OU Current trip detection	9	4	Continuous	94
Compressor rotor location detection error	9	5	Continuous	95
OU fan motor error	9	7	Continuous	97
OU fan motor 2 error	9	8	Continuous	98
4-way valve error	9	9	Continuous	99
Coil (expansion valve) error	9	10	Continuous	9A
Outdoor unit error	9	15	Continuous	9U
OU Abnormal discharge temp error	10	1	Continuous	A1
Abnormal compressor temp error	10	3	Continuous	A3
High Pressure error	10	4	Continuous	A4
Low pressure error	10	5	Continuous	A5
VRF Branch box error	13	1	Continuous	J1
8-Way Multi branch box error	13	2	Continuous	J2
Accessories	PCB LED	PCB LED		WRC
VRF RB: Cable crossed OU/RB - IU/RB	on solid	on solid	-	-
VRF RB: Coms/Main PCB error	on solid	Continuous	-	-
WRC: Incompatible IU connected	-	-	-	C0:15
WRC: Indoor - WRC comms error	-	-	-	C0:12

# FUJITSU TRAINING

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