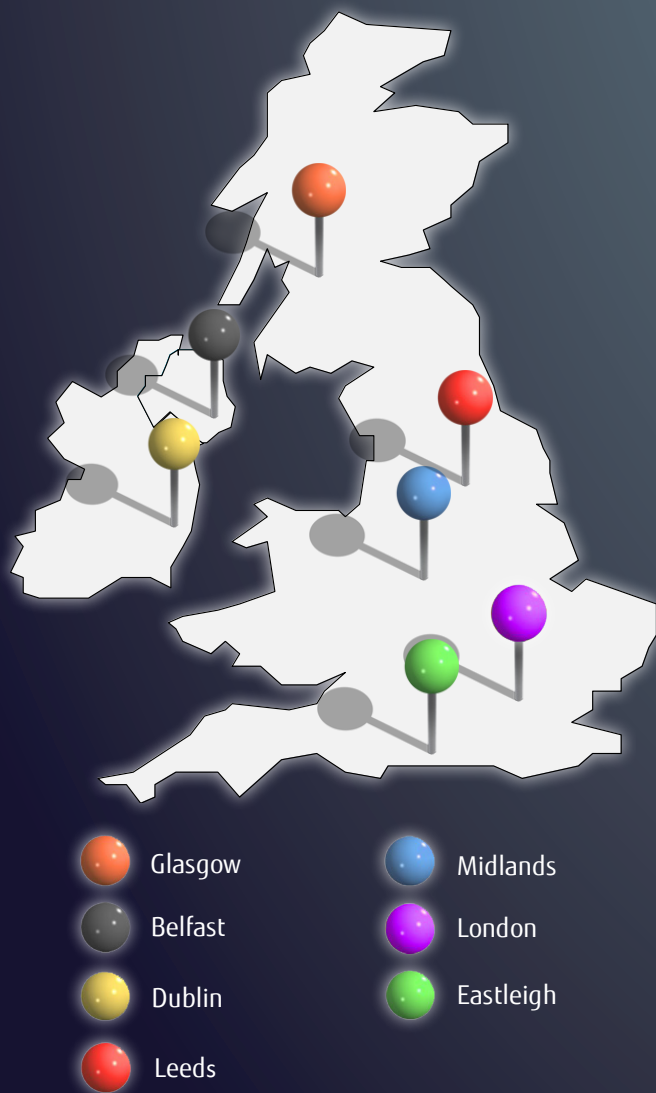# FUJITSU
AIR CONDITIONING

Welcome to the world of
FUJITSU
TRAINING
2018/19

FUJITSU GENERAL AIR CONDITIONING (UK)

Fujitsu Training Course Locations

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

Glasgow

Belfast
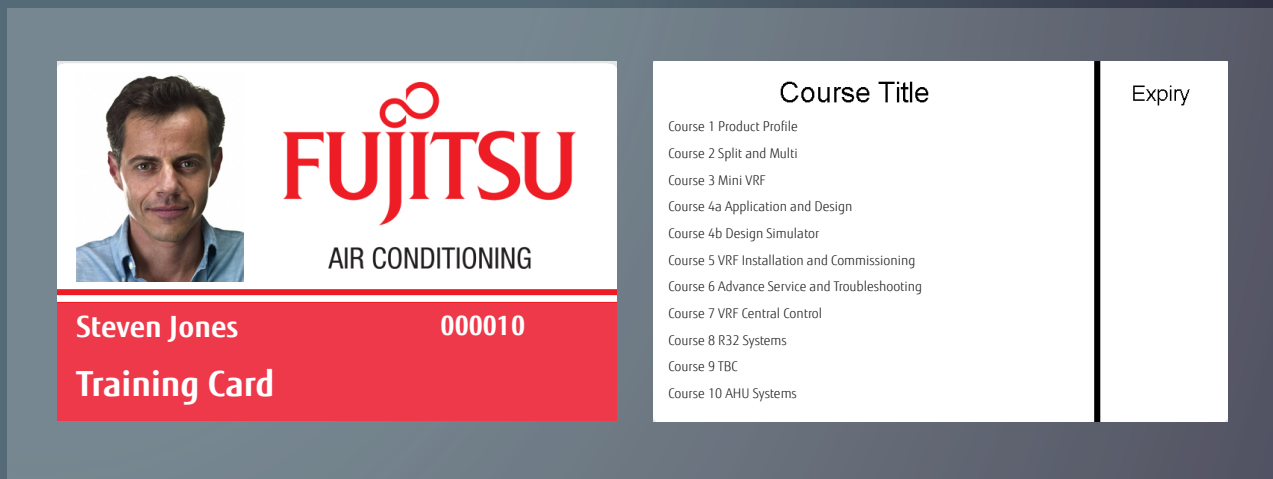
Dublin

Leeds

Midlands

London

Eastleigh

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 2018/19 season will receive a training card. The training card will provided details of courses completed.

Course Title	Expiry
Course 1 Product Profile	
Course 2 Split and Multi	
Course 3 Mini VRF	
Course 4a Application and Design	
Course 4b Design Simulator	
Course 5 VRF Installation and Commissioning	
Course 6 Advance Service and Troubleshooting	
Course 7 VRF Central Control	
Course 8 R32 Systems	
Course 9 TBC	
Course 10 AHU Systems	

Steven Jones   000010

Training Card

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, useful tools, clothing, and, when four training courses have been completed, a Screwfix voucher.

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

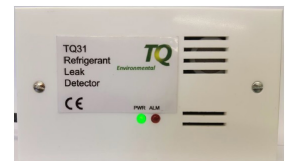## VRF System Application and Design Including Design Simulator

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.

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 ☐ Leeds ☐ Glasgow ☐ Belfast ☐ Dublin ☐ Eastleigh ☐ Dudley ☐

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

☐ Comfort Club Member   Comfort Club Membership No. ....

☐ Comfort Club Non-Member   F-Gas Registered Company No. ....

☐ 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.

FUJITSU
AIR CONDITIONING

2018-19 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.

	October 2018	November 2018	December 2018	January 2019	February 2019	March 2019	April 2019	May 2019
1								2
2	2						2	8
3	3						3	
4	8		2				8	
5			3		2	5		
6		2	4b		3	10		
7		8			8	8		3
8		3		2				5
9	4b			3			5	6
10	5			8			6	
11	6		5				10	
12			6		2	2		
13		3	8		8	3		
14		5			4b	8		2
15		6		2				3
16	2			5			2	8
17	8			6			2	
18	3		2				8	
19			3		5	2		
20		2	8		2	3		
21		2			8	5		4b
22		5		3				3
23	10			5				5
24	2			6				
25	8							
26								
27								
28								
29								
30								
31								

London Training Centre	Leeds Training Centre	Training Courses & Centres available on request

Table Key Course Number	Product Group	Course Title
1	ALL	An introduction to the Fujitsu Product Portfolio
2	SS,MS	Split and Multi Split Systems - Installation, Commissioning and Troubleshooting
3	Mini VRF	Mini VRF - Installation, Commissioning and Troubleshooting
4a	VRF	Application and Design (Inc Design Simulator)
4b	VRF	Design Simulator (Software only)
5	VRF	Installation and Commissioning
6	VRF	Advanced Service and Troubleshooting (Inc Service Tool)
7	VRF	VRF Central Controllers - Installation and Commissioning
8	R32	An insight into R32 - Installation, Commissioning, Troubleshooting
9	TBC	TBC
10	AHU	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   Phone: +44 (0)208 731 3450   Website: 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 ASYG07-12LU ASYG09-12LT		S	20 15	–	–	8 6	–	–	–	–	–	–	50g/m
ASYG14LM ASYG14LU		–	S	20 15	–	8 6	8 6	–	–	–	–	–	50g/m
ASYG18LF		–	S	25 15	–	10 6	10 6	–	–	–	–	–	50g/m
ASYG24LF		–	–	S	30 15	–	12 6	12 6	–	–	–	–	50g/m
ASYG30-36LM		–	–	–	–	–	S	50 20	20 9	20 9	–	–	90g/m
AUYG12LV ARYG12LL ARYG12LH ARYG12LS		S	25 15	–	–	10 6	–					–	50g/m
AUYG14-18LV ARYG14-18LL ARYG14-18LS ARYG14LH ABYG18LV		–	S	25 15	–	10 6	10 6	–	–	–	–	–	50g/m
AUXG18LR ARYG18LH		–	S	30 15	–	12 6	12 6	–	–	–	–	–	50g/m
AUYG24LV ARYG24LM ARYG24LH ABYG24LV AUXG24LR		–	–	S	30 15	–	12 6	12 6	–	–	–	–	50g/m
AUYG30-54LR (1~) AUXG30-54LR ARYG30-45LM (1~) ARYG45-54LH (1~) ARYG30-54LH ABYG30-45LR (1~)		–	–	–	–	–	S	50 20	20 9	20 9	–	–	90g/m
AUYG36-54LR (3~) ARYG36-45LM (3~) ARYG45-60LH (3~) ABYG36-54LR (3~)		–	–	–	–	–	S	75 30	30 10	30 10	–	–	90g/m
AOYG36-54LATT (3~) AOYG36-54LBTB (1~)		–	–	–	–	–	S	75 30	30 10	30 10	–	–	90g/m
ARYC72-90LH ARYG72-90LH		–	–	–	–	–	–	–	–	–	S	48 12	170g/m

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 cab 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
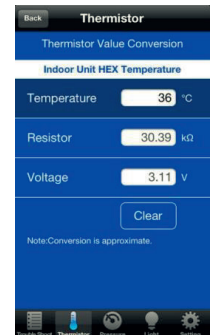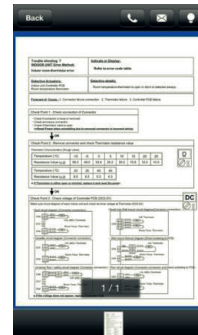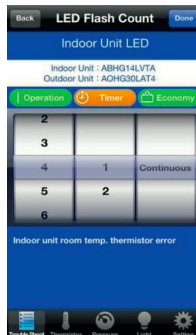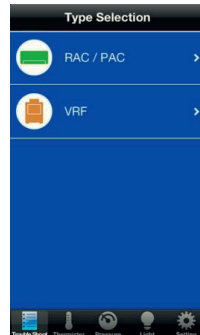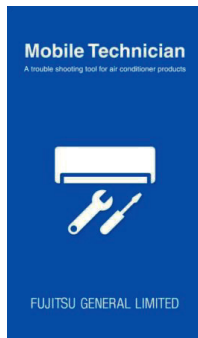
Error Detail	Indoor LED Display Flashes			Wired RC	Error Detail	Indoor LED Display Flashes			Wired RC
	Operation	Timer	Economy			Operation	Timer	Economy	
Serial communication error	1	1	Continuous	11	OU Discharge temp sensor error	7	1	Continuous	71
Wired RC communication error	1	2	Continuous	12	Compressor temp sensor error	7	2	Continuous	72
Network communication error	1	4	Continuous	14	OU Heat-Ex liquid temp sensor error	7	3	Continuous	73
Check run unfinished	1	5	Continuous	15	OU Ambient temp sensor error	7	4	Continuous	74
Transmission/Peripheral connect error	1	6	Continuous	16	OU Suction ref temp sensor error	7	5	Continuous	75
Refrigeration circuit address setting error	2	1	Continuous	21	2/3 way valve temp sensor error	7	6	Continuous	76
Indoor unit capacity error	2	2	Continuous	22	OU Heat sink temp sensor error	7	7	Continuous	77
Combination error	2	3	Continuous	23	Sub-cool inlet/outlet temp sensor error	8	2	Continuous	82
Connection unit number error	2	4	Continuous	24	OU Liquid pipe temp sensor error	8	3	Continuous	83
Address setting error	2	6	Continuous	26	OU current sensor error	8	4	Continuous	84
Master/Slave unit set-up error	2	7	Continuous	27	HP/LP pressure sensor/switch error	8	6	Continuous	86
Connection unit number error in WRC circuit	2	9	Continuous	29	OU Current trip detection	9	4	Continuous	94
Power supply interruption error	3	1	Continuous	31	Compressor rotor location detection error	9	5	Continuous	95
Indoor PCB EPPROM error	3	2	Continuous	32	OU fan motor error	9	7	Continuous	97
Manual auto switch error	3	5	Continuous	35	OU fan motor 2 error	9	8	Continuous	98
Indoor unit WRC communication error	3	10	Continuous	3A	4-way valve error	9	9	Continuous	99
Inlet air temp sensor error	4	1	Continuous	41	Coil (expansion valve) error	9	10	Continuous	9A
Indoor Heat-Ex middle temp sensor error	4	2	Continuous	42	Outdoor unit error	9	15	Continuous	9U
Indoor unit fan motor error	5	1	Continuous	51	OU Abnormal discharge temp error	10	1	Continuous	A1
Indoor EEV error	5	2	Continuous	52	Abnormal compressor temp error	10	3	Continuous	A3
Drain pump error	5	3	Continuous	53	High Pressure error	10	4	Continuous	A4
Damper error	5	7	Continuous	57	Low pressure error	10	5	Continuous	A5
Intake grille error	5	8	Continuous	58	VRF Branch box error	13	1	Continuous	J1
Indoor unit error	5	15	Continuous	5U	8-Way Multi branch box error	13	2	Continuous	J2
Outdoor PCB/communication error	6	2	Continuous	62	Accessories	PCB LED	PCB LED		WRC
Inverter error	6	3	Continuous	63	VRF RB: Cable crossed OU/RB - IU/RB	on solid	on solid	-	-
Active filter/PFC circuit error	6	4	Continuous	64	VRF RB: Coms/Main PCB error	on solid	Continuous	-	-
Trip terminal 'L' error	6	5	Continuous	65	WRC: Incompatible IU connected	-	-	-	C0:15
Display PCB/communication error	6	10	Continuous	6A	WRC: Indoor - WRC comms error	-	-	-	C0:12

FUJITSU
TRAINING

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