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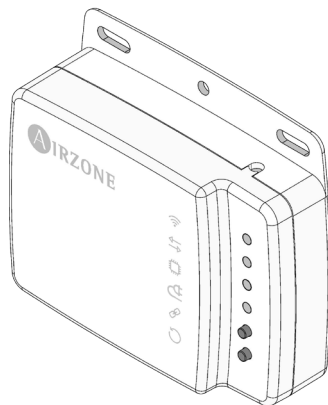
Manual de integração

Aidoo Modbus

Panasonic

Para PAW-AZAC-MBS-1 e PAW-AZRC-MBS-1

[Para AZAI6WSCPNO e AZAI6WSCPNI]



AIRZONE

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Precauções e política ambiental

PRECAUÇÕES

Para sua segurança e de seus dispositivos, siga as seguintes instruções:

- Não manipule o sistema com as mãos molhadas ou húmidas.
- Faça todas as conexões ou desconexões com o sistema de climatização sem alimentá-lo.
- Tenha o cuidado de não fazer nenhum curto-circuito nas conexões do sistema.

POLÍTICA AMBIENTAL



Nunca deite fora esse equipamento com o lixo doméstico. Caso não sejam tratados adequadamente, os produtos elétricos e eletrônicos podem liberar substâncias que causam danos ao meio ambiente. A imagem de um recipiente riscado ao meio indica coleta seletiva de dispositivos elétricos, que são tratados de maneira diferente do lixo urbano. Para uma gestão ambiental correta, no final de sua vida útil, os equipamentos elétricos deverão ser levados a centros de coleta.

As peças desses equipamentos poderão ser recicladas. Portanto, respeite a regulamentação em vigor sobre proteção ambiental. Entregue o equipamento que não será mais utilizado ao seu distribuidor ou a um centro de coleta especializado.

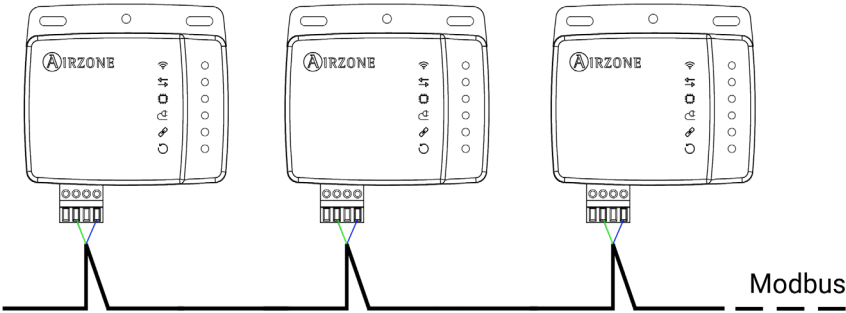
Os infratores estarão sujeitos às sanções e medidas estabelecidas pela Lei de proteção do meio ambiente.

Porta de comunicações RS-485

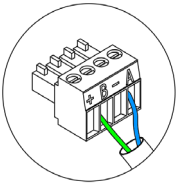
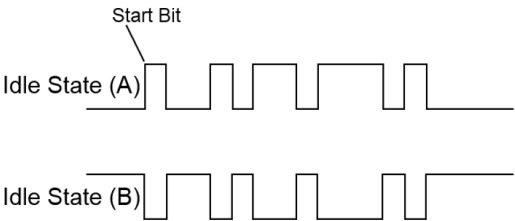
O RS-485, também conhecido como EIA-485, é um padrão de comunicação em barramento.

Barramento de integração	
Velocidade da porta de comunicação	19200 bps
Modo de comunicação	Half duplex
Comprimento da trama	8 bits
Bits de parada	1 bit
Controlo de fluxo	Nenhum
Paridade	Par

CONEXÃO



Para o correto funcionamento dos sistemas Airzone, verifique se apenas os cabos de comunicação (verde-azul) estão conectados em cada terminal nos respetivos barramentos domóticos. Fixe os cabos nos diferentes terminais com os parafusos, respeitando o código de cores.



- A Azul
- B Verde

Protocolo Modbus

O Modbus é um protocolo de comunicação, baseado na **arquitetura mestre/escravo**, que organiza a informação fisicamente em formatos ou grupos lógicos de informação.

Cada dispositivo da rede Modbus possui um endereço único. O dispositivo mestre envia um comando em uma trama, na qual está contida o endereço do dispositivo ou dispositivos destinatários (escravos). Todos os dispositivos recebem a trama, mas apenas o destinatário o interpreta e o executa, e devolve uma mensagem de confirmação ou de erro.

***Nota:** Existe a possibilidade de enviar informações a diversos dispositivos de maneira simultânea, através de uma trama denominada Broadcast.*

Todas as mensagens enviadas incluem informações redundantes que asseguram a integridade da recepção. Se o mestre não receber uma confirmação após certo tempo, ele entende que ocorreu um erro e termina a comunicação.

O modo de transmissão utilizado é MODBUS-RTU. Cada byte de dados é representado por caracteres de 4 bits em hexadecimal. O formato da trama é o seguinte:

Início	0	1	2	3	4	5	6	7	Paridade	Fim
--------	---	---	---	---	---	---	---	---	----------	-----

CONFIGURAÇÃO DO ENDEREÇO ESCRAVO DO DISPOSITIVO AIDOO MODBUS PANASONIC

O Aidoo é um **dispositivo Modbus escravo**, por isso é necessário indicar o seu endereço. A partir de um mestre Modbus, você pode configurar os seguintes parâmetros:

Registro	Descrição	Valores
56	Modbus address	Modbus slave address (Default 1)
57	Config. Baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps (Default) 9 → 57600 bps 10 → 115200 bps 11 → 600 bps 12 → 38400 bps 13 → 76800 bps
58	Config. Port parity	0 → None (Default) 1 → Odd 2 → Even

Códigos de função Modbus

Os comandos básicos Modbus permitem controlar um dispositivo para modificar o valor de alguns dos seus registos (espaço em memória) ou solicitar o conteúdo deles; de acordo com diferentes códigos de função:

Código	Função
03	Leitura de registos de saída ou internos
04	Leitura de registos de entrada
06	Gravação de apenas um registo
16	Gravação de vários registos

Comandos Modbus

O formato dos comandos para as operações de leitura/gravação é o seguinte (8 byte):

Endereço do escravo	Código de operação	Endereço do registo	Dados	CRC
1 byte	1 byte	1 byte	1...2-N bytes	2 bytes

- **Endereço do escravo:** Define o sistema ao qual deseja-se aceder. Os endereços variam de 1 a 247, e o endereço 0 é reservado para transmissão a todos os dispositivos (Broadcast).
- **Código de operação:** Indica a função a ser realizada pelo comando.
- **Endereço de registo:** Indica o endereço do registo ao qual deseja-se aceder. Em comandos sobre múltiplos registos, define o Registo de Início, a partir do qual a operação ocorrerá de forma consecutiva.
- **Dados:** Formado por 2 bytes (operações simples) ou conjunto de 2 bytes (operações múltiplas) que contém a informação do comando.
- **CRC:** São adicionados 2 bytes no final da trama para detetar erros na transmissão ou receção. Para isso, utiliza-se o método de Verificação de redundância cíclica (Cyclic Redundant Code).

O polinómio gerador é: **CRC-16** = $x^{16} + x^{15} + x^2 + 1$.

COMANDOS DE GRAVAÇÃO

Gravação de apenas um registo

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Gravação de apenas um registo (6)
2	Endereço de registo
3	
4	Dados a serem gravados
5	
6	CRC
7	

A resposta, quando não ocorrer nenhum tipo de erro, deve ter exatamente o mesmo formato do comando de gravação.

Gravação de vários registos

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Gravação de vários registos (16)
2	Endereço de registo de início
3	Número de registos a serem gravados (N)
4	
5	Número de bytes totais de gravação (2·N)
6	Dados a serem gravados em registo 1
7	
...	
5 + 2·N	Dados a serem gravados em registo N
6 + 2·N	
7 + 2·N	CRC
8 + 2·N	

A resposta, quando não ocorrer nenhum tipo de erro, será:

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Gravação de vários registos (16)
2	Endereço de registo de início
3	
4	Número de registos a serem gravados (N)
5	
6	CRC
7	

COMANDOS DE LEITURA

Pergunta

Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Leitura de registos (3/4)
2	Endereço de registo de início
3	
4	Número de registos a serem lidos (N)
5	
6	CRC
7	

Resposta

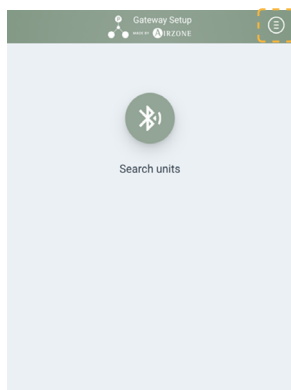
Byte	Campo
0	Endereço do sistema (1 - 247) (0: Broadcast)
1	Leitura de registos (3/4)
2	Número de bytes resposta (2·N)
3	Dados a serem lidos em registo 0
4	
...	
3 + 2·N	Dados a serem lidos em registo N
4 + 2·N	
5 + 2·N	CRC
6 + 2·N	

Gateway Setup for Panasonic

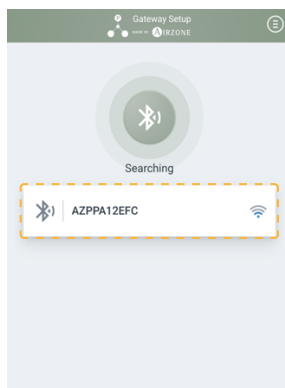
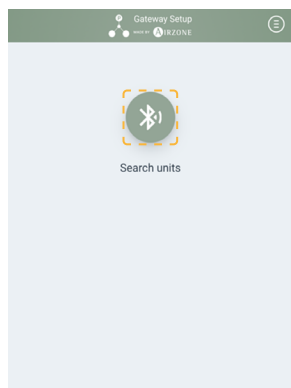
CONFIGURAÇÃO DE REDE

No ecrã principal da aplicação "Gateway Setup for Panasonic", carregando no botão *Definições*, o utilizador poderá seleccionar a língua de trabalho da aplicação, bem como as unidades de temperatura.

- **Versão.** Indica a versão da aplicação.
- **Língua.** A aplicação está disponível em 9 línguas (alemão, grego, inglês, espanhol, francês, italiano, polaco, português e turco).
- **Unidades.** Celsius (°C) ou Fahrenheit (°F).
- **Feedback ativo.** Esta funcionalidade requer que a vibração do dispositivo seja ativada.



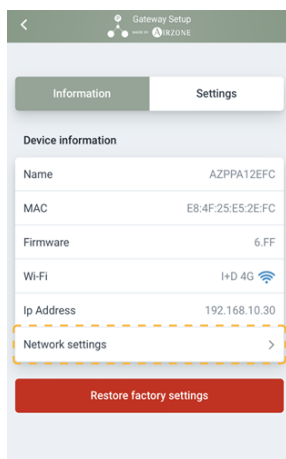
De volta ao ecrã principal, carregando no ícone *Bluetooth*, o utilizador inicia a procura de dispositivos próximos. Selecione o seu "Aidoo Modbus Panasonic" para continuar.



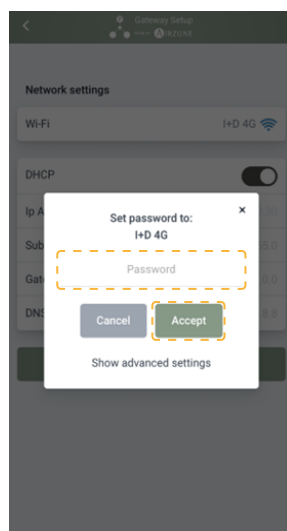
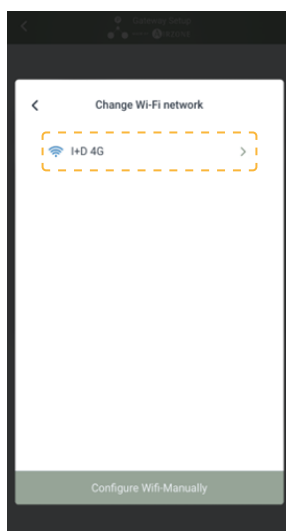
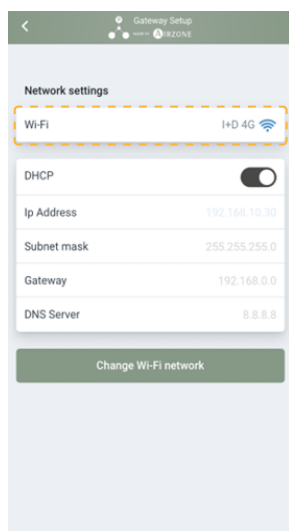
Após selecionar o seu dispositivo, visualizará o menu de informação.

- **Nome.** Nome do dispositivo.
- **MAC.** Endereço MAC do dispositivo.
- **Firmware.** Indica a versão do dispositivo.
- **Wi-Fi.** Rede na que o dispositivo está ligado.
- **Endereço IP.** Mostra o endereço IP do dispositivo.
- **Configuração de rede.** Permite configurar o dispositivo.

Carregando no botão *Reposição de fábrica*, os valores iniciais do dispositivo são repostos.



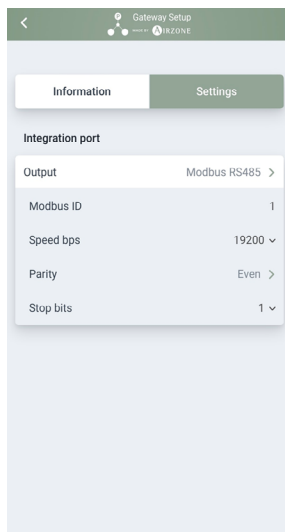
No submenu *Definições de rede*, o utilizador pode alterar a rede Wi-Fi, se necessário.



CONFIGURAÇÃO DO MODBUS RS-485

No menu de configuração, o utilizador pode alterar os seguintes parâmetros do dispositivo:

- **Modbus ID.** Valor entre 1 e 255.
- **Velocidade bps.** Pode seleccionar entre 14 velocidades (100, 300, 500, 600, 1200, 2400, 4800, 7800, 9600, 19200 (por definição), 38400, 57600, 76800 e 115200 bps).
- **Paridade.** Nenhuma, par ou ímpar.
- **Bits de paragem.** Valor entre 1 e 2.



Transfira a aplicação Gateway Setup for Panasonic

Registos Modbus

AIDOO MODBUS PANASONIC RAC DOMESTIC (PAW-AZAC-MBS-1 [AZAI6WSCPNO])

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off ⁽¹⁾	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
1	Set point ⁽²⁾	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature ⁽³⁾	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
5	Louver vertical	0-4 → Louver pos 8 → Auto pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 4 → Dry	R	0x03, 0x04
15	Available speeds	Bit 0 → Auto Bit 2 → Low Bit 3 → Medium-Low Bit 4 → Medium Bit 5 → Medium-High Bit 6 → High	R	0x03, 0x04
16	Available louvers	Bit 0 → Auto U/D Bit 8-11 → Vertical positions (0-4)	R	0x03, 0x04

(1) Se o valor lido for superior a 1, o bit menos significativo do registo (Bit 0) será tratado.

(2) Os limites mínimo / máximo dependem da sua unidade AC.

(3) Deve ser superior a 0.

Registers	Description	Values	Read (R) Write (W)	Operations
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	Outdoor temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
45	Consumption	Consumption x10 Example: 7 A → 70	R	0x03, 0x04
53	Work temperature ⁽⁴⁾	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
54	Speeds numeric	0 → Auto 1 → Silent 2 → Low 3 → Medium 4 → High 5 → Maximum	R & W	0x03, 0x04, 0x06, 0x10, 0x16
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16

(4) Temperatura utilizada pela unidade como temperatura de trabalho.

Registers	Description	Values	Read (R) Write (W)	Operations
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps 11 → 600 bps 12 → 38400 bps 13 → 76800 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16
102	Nanoe On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16

AID00 MODBUS PANASONIC PACI (PAW-AZRC-MBS-1 [AZAI6WSCPNI])

Registers	Description	Values	Read (R) Write (W)	Operations
0	Unit status On / Off ⁽¹⁾	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
1	Set point ⁽²⁾	Setpoint x10 Example: 23 °C → 230	R & W	0x03, 0x04, 0x06, 0x10, 0x16
2	Local temperature ⁽³⁾	Room Temp x10 Example: 23 °C → 230	R	0x03, 0x04
3	Modes	1 → Auto 2 → Cool 3 → Heat 4 → Fan 5 → Dry	R & W	0x03, 0x04, 0x06, 0x10, 0x16
5	Louver vertical ⁽⁴⁾	0-4 → Louver pos 9 → Swing pos	R & W	0x03, 0x04, 0x06, 0x10, 0x16
7	Unit error code 1 (first part)	Ascii value	R	0x03, 0x04
8	Unit error code 2 (second part)	Ascii value	R	0x03, 0x04
14	Available modes	Bit 0 → Auto Bit 1 → Cool Bit 2 → Heat Bit 3 → Ventilation Bit 4 → Dry	R	0x03, 0x04
15	Available speeds ⁽⁵⁾	Bit 0 → Auto Bit 2 → Speed 1 Bit 3 → Speed 2 Bit 4 → Speed 3 Bit 5 → Speed 4* Bit 6 → Speed 5*	R	0x03, 0x04
16	Available louvers ⁽⁴⁾	Bit 0 → Auto U/D Bit 8-11 → Vertical positions (0-4)	R	0x03, 0x04

(1) Se o valor lido for superior a 1, o bit menos significativo do registo (Bit 0) será tratado.

(2) Os limites mínimo / máximo dependem da sua unidade AC.

(3) Deve ser superior a 0.

(4) Se "Stop lâminas" for seleccionado na unidade, a posição 0 será representada neste registo, embora internamente a unidade permaneça em "Stop lâminas". Não é possível enviar uma "Stop lâminas" para a unidade.

(5) O número de velocidades dependerá da sua unidade de AC. *As velocidades 4 e 5 podem não estar disponíveis em todos os modelos.

Registers	Description	Values	Read (R) Write (W)	Operations
17	Limit temp. max air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
18	Limit temp. min air cool	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
19	Limit temp. max air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
20	Limit temp. min air heat	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
21	Limit temp. max air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
22	Limit temp. min air auto	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
25	Limit temp. max air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
26	Limit temp. min air dry	Limit x10 Example: 23 °C → 230	R	0x03, 0x04
35	Outdoor temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
36	Return temp.	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
45	Consumption	Consumption x10 Example: 7 A → 70	R	0x03, 0x04
53	Work temperature ⁽⁶⁾	Temp x10 Example: 23 °C → 230	R	0x03, 0x04
54	Speeds numeric ⁽⁵⁾	0 → Auto 1 → Speed 1 2 → Speed 2 3 → Speed 3 4 → Speed 4* 5 → Speed 5*	R & W	0x03, 0x04, 0x06, 0x10, 0x16
55	Error value	Value of error Example: 0x009	R	0x03, 0x04
56	Modbus address	Modbus slave address (Default 1)	R & W	0x03, 0x04, 0x06, 0x10, 0x16

*(5) O número de velocidades dependerá da sua unidade de AC. *As velocidades 4 e 5 podem não estar disponíveis em todos os modelos.*

(6) Temperatura utilizada pela unidade como temperatura de trabalho.

Registers	Description	Values	Read (R) Write (W)	Operations
57	Config. port baudrate	0 → 100 bps 1 → 300 bps 2 → 500 bps 3 → 1200 bps 4 → 2400 bps 5 → 4800 bps 6 → 7800 bps 7 → 9600 bps 8 → 19200 bps 9 → 57600 bps 10 → 115200 bps 11 → 600 bps 12 → 38400 bps 13 → 76800 bps	R & W	0x03, 0x04, 0x06, 0x10, 0x16
58	Config. port parity	0 → None 1 → Odd 2 → Even	R & W	0x03, 0x04, 0x06, 0x10, 0x16
102	Nanoe On / Off	0 → OFF 1 → ON	R & W	0x03, 0x04, 0x06, 0x10, 0x16
103	Nanoe Error	0 → No 1 → Yes	R	0x03, 0x04

Códigos de erro

AIDOO MODBUS PANASONIC RAC DOMESTIC (PAW-AZAC-MBS-1 [AZAI6WSCPN0])

Diagnosis display	Abnormality / Protection control	Abnormality judgement	Protection operation	Problem	Check location
H00	No memory of failure	-	Normal operation	-	-
H11	Indoor / Outdoor abnormal communication	After operation for 1 minute	Indoor fan only operation can start by entering into force cooling operation	Indoor / Outdoor communication not establish	- Indoor / Outdoor wire terminal - Indoor / Outdoor PCB - Indoor / Outdoor connection wire
H12	Indoor unit capacity unmatched	90s after power supply	-	Total indoor capability more than maximum limit or less than minimum limit, or number of indoor unit less than two	- Indoor / Outdoor connection wire - Indoor / Outdoor PCB - Specification and combination table in catalogue
H14	Indoor intake air temperature sensor abnormality	Continuous for 5s	-	Indoor intake air temperature sensor open or short circuit	Indoor intake air temperature sensor lead wire and connector
H15	Compressor temperature sensor abnormality	Continuous for 5s	-	Compressor temperature sensor open or short circuit	Compressor temperature sensor lead wire and connector
H16	Outdoor current transformer (CT) abnormality	-	-	Current transformer faulty or compressor faulty	Outdoor PCB faulty or compressor faulty
H19	Indoor fan motor mechanism lock	Continuous happen for 7 times	-	Indoor fan motor lock or feedback abnormal	- Fan motor lead wire and connector - Fan motor lock or block
H23	Indoor heat exchanger temperature sensor abnormality	Continuous for 5s	-	Indoor heat exchanger temperature sensor open or short circuit	Indoor heat exchanger temperature sensor lead wire and connector
H24	Indoor heat exchanger temperature sensor 2 abnormality	Continuous for 5s	-	Indoor heat exchanger temperature sensor 2 open or short circuit	Indoor heat exchanger temperature sensor 2 lead wire and connector
H25	Indoor ion device abnormality	Port is ON for 10s during ion device off	-	-	Ion device PCB
H27	Outdoor air temperature sensor abnormality	Continuous for 5s	-	Outdoor air temperature sensor open or short circuit	Outdoor air temperature sensor lead wire and connector

Diagnosis display	Abnormality / Protection control	Abnormality judgement	Protection operation	Problem	Check location
H28	Outdoor heat exchanger temperature sensor 1 abnormality	Continuous for 5s	-	Outdoor heat exchanger temperature sensor 1 open or short circuit	· Outdoor heat exchanger temperature sensor 1 lead wire and connector
H30	Outdoor discharge pipe temperature sensor abnormality	Continuous for 5s	-	Outdoor discharge pipe temperature sensor open or short circuit	· Outdoor discharge pipe temperature sensor lead wire and connector
H32	Outdoor heat exchanger temperature sensor 2 abnormality	Continuous for 5s	-	Outdoor heat exchanger temperature sensor 2 open or short circuit	· Outdoor heat exchanger temperature sensor 2 lead wire and connector
H33	Indoor / Outdoor misconnection abnormality	-	-	Indoor and outdoor rated voltage different	· Indoor and outdoor units check
H34	Outdoor heat sink temperature sensor abnormality	Continuous for 2s	-	Outdoor heat sink temperature sensor open or short circuit	· Outdoor heat sink sensor
H36	Outdoor gas pipe temperature sensor abnormality	Continuous for 5s	Heating protection operation only	Outdoor gas pipe temperature sensor open or short circuit	· Outdoor gas pipe temperature sensor lead wire and connector
H37	Outdoor liquid pipe temperature sensor abnormality	Continuous for 5s	Cooling protection operation only	Outdoor liquid pipe temperature sensor open or short circuit	· Outdoor liquid pipe temperature sensor lead wire and connector
H38	Indoor / Outdoor mismatch (brand code)	-	-	Brand code not match	· Check indoor unit and outdoor unit
H39	Abnormal indoor operating unit or standby units	3 times happen within 40 minutes	-	Wrong wiring and connection pipe, expansion valve abnormality, indoor heat exchanger sensor open circuit	· Check indoor / outdoor connection wire and connection pipe · Indoor heat exchanger sensor lead wire and connector · Expansion valve and lead wire and connector
H41	Abnormal wiring or piping connection	-	-	Wrong wiring and connecting pipe, expansion valve abnormality	· Check indoor / outdoor connection wire and connection pipe · Expansion valve and lead wire and connector
H59	ECONAVI sensor abnormality	Continuous for 25s	-	ECONAVI sensor open or short circuit	· ECONAVI sensor (defective or disconnected) · ECONAVI PCB
H64	Outdoor high pressure sensor abnormality	Continuous for 1 minute	-	High pressure sensor open circuit during compressor stop	· High pressure sensor · Lead wire and connector

Diagnosis display	Abnormality / Protection control	Abnormality judgement	Protection operation	Problem	Check location
H67	Nanoe abnormality	Nanoe stop for 5 minutes for 3 times	-	Nanoe faulty	· PCB · Nanoe system · High voltage
H70	Light sensor abnormality	Continuous for 24 hours, 15 days	-	Light sensor open or short circuit	· Light sensor (defective or disconnected)
H85	Abnormal communication between indoor & wireless LAN module	Communication error for 10 minutes for 3 times	-	Wireless LAN LED Off or timer LED blinking	· Network adaptor · Router · Network coverage
H97	Outdoor fan motor mechanism lock	2 times happen within 30 minutes	-	Outdoor fan motor lock or feedback abnormal	· Outdoor fan motor lead wire and connector · Fan motor lock or block
H98	Indoor high pressure protection	-	-	Indoor high pressure protection (Heating)	· Check indoor heat exchanger · Air filter dirty · Air circulation short circuit
H99	Indoor operating unit freeze protection	-	-	Indoor freeze protection (Cooling)	· Check indoor heat exchanger · Air filter dirty · Air circulation short circuit
F11	4-way valve switching abnormality	4 times happen within 30 minutes	-	4-way valve switching abnormal	· 4-way valve · Lead wire and connector
F17	Indoor standby units freezing abnormality	3 times happen within 40 minutes	-	Wrong wiring and connecting pipe, expansion valve leakage, indoor heat exchanger sensor open circuit	· Checker indoor / outdoor connection wire and pipe · Indoor heat exchanger sensor lead wire and connector · Expansion valve lead wire and connector
F90	Power factor correction (PFC) circuit protection	4 times happen within 10 minutes	-	Power factor correction circuit abnormal	· Outdoor PCB faulty
F91	Refrigeration cycle abnormality	2 times happen within 20 minutes	-	Refrigeration cycle abnormal	· Insufficient refrigerant or valve close
F93	Compressor abnormal revolution	4 times happen within 20 minutes	-	Compressor abnormal revolution	· Power transistor module faulty or compressor lock
F94	Compressor discharge overshoot protection	4 times happen within 30 minutes	-	Compressor discharge pressure overshoot	· Check refrigeration system
F95	Outdoor cooling high pressure protection	4 times happen within 20 minutes	-	Cooling high pressure protection	· Check refrigeration system · Outdoor air circuit

Diagnosis display	Abnormality / Protection control	Abnormality judgement	Protection operation	Problem	Check location
F96	Power transistor module overheating protection	4 times happen within 30 minutes	-	Power transistor module overheat	· PCB faulty · Outdoor air circuit (fan motor)
F97	Compressor overheating protection	3 times happen within 30 minutes	-	Compressor overheat	· Insufficient refrigerant
F98	Total running current protection	3 times happen within 20 minutes	-	Total current protection	· Check refrigeration system · Power source or compressor lock
F99	Outdoor direct current (DC) peak detection	Continuous happen for 7 times	-	Power transistor module current protection	· Power transistor module faulty or compressor lock

AIDOO MODBUS PANASONIC PACI (PAW-AZRC-MBS-1 [AZAI6WSCPNI])

Unidades ECO G

Diagnosis display	Abnormality / Protection control	Problem
A01	Engine oil pressure error	-
A02	Engine oil error	-
A03	Engine high-revolution error	-
A04	Engine low-revolution error	-
A05	Ignition source error	-
A06	Engine start failure	-
A07	Fuel gas valve error	-
A08	Engine stall	-
A10	Exhaust gas temperature high	-
A12	Throttle	Stepping motor failure
A14	Engine oil pressure switch	-
A15	Start power source output short circuit	-
A16	Starter lock	-
A17	CT error	Starter current detection failure
A19	Low coolant temperature	-
A20	High coolant temperature	-
A21	Coolant level error	-
A22	Coolant pump error	-
A23	Crankshaft angle sensor	-
A24	Camshaft angle sensor error	-
A25	Clutch error	-
A26	Flameout error	-
A27	Catalyst temperature error	-
A30	Low fuel gas pressure error	-
E01	Remote controller receive failure	-
E02	Remote controller transmission failure	-
E03	Indoor unit receive failure from remote controller (central)	-
E04	Indoor unit receive failure from outdoor unit	-
E05	Indoor unit transmission failure to outdoor unit	-
E06	Outdoor unit receive failure from indoor unit	-
E07	Outdoor unit transmission failure to indoor unit	-

Diagnosis display	Abnormality / Protection control	Problem
E08	Duplicated indoor unit address setting	-
E09	Multiple main remote controller units set	-
E11	Indoor unit receive failure from signal output board	-
E12	Automatic address setting in progress	-
E13	Indoor unit transmission failure to remote controller	-
E15	Automatic address alarm (too few units)	-
E16	Automatic address alarm (too many units)	-
E18	Group control wiring communication failure	-
E20	No indoor unit in automatic address setting	-
E21	Outdoor main board failure	-
E22	Outdoor main board sensor error	-
E24	Communication failure between outdoor units	-
E26	Inconsistencies in number of outdoor units	-
E31	Communication failure between units	-
F01	Indoor heat exchanger inlet temperature sensor (E1)	-
F02	Water heat exchanger anti-freeze sensor (E2)	-
F03	Water heat exchanger refrigerant outlet temperature sensor (E3)	-
F04	Compressor outlet temperature sensor	-
F06	Outdoor heat exchanger inlet temperature sensor / Outdoor heat exchanger 2 inlet temperature sensor (3WAY only)	-
F08	Outside air temperature sensor	-
F10	Indoor unit intake temperature sensor / Hot and cold water inlet sensor	-
F11	Indoor unit discharge temperature sensor / Hot and cold water outlet sensor	-
F12	Compressor inlet temperature sensor	-
F13	Coolant temperature sensor	-
F16	Compressor inlet / outlet pressure sensor error	-
F17	Hot water outlet temperature sensor	-
F18	Exhaust gas temperature sensor	-
F20	Clutch coil temperature sensor error	-
F21	Clutch coil 2 temperature sensor error	-
F29	Indoor nonvolatile memory (EEPROM) error	-
F31	Outdoor nonvolatile memory (EEPROM) error	-
H07	Compressor oil depletion error	-
L02	Inconsistencies in indoor / outdoor unit models	-
L03	Multiple main units set for group control	-

Diagnosis display	Abnormality / Protection control	Problem
L04	Duplicate system (outdoor unit) address setting	-
L05	Duplicate indoor unit priority setting	-
L06	Duplicate indoor unit priority setting	-
L07	Group control wire present for individual-control indoor unit	-
L08	Indoor unit address not set	-
L09	Indoor unit capacity not set	-
L10	Outdoor unit capacity not set	-
L13	Indoor unit model type setting failure	-
L15	Defective pairing of indoor units	-
L16	Faulty water heat exchanger unit parallel array addresses	-
L19	Duplicated water heat exchanger unit parallel arrays addresses	-
L21	Gas type setting failure	-
P01	Indoor fan error / Indoor unit fan rpm error	-
P03	High compressor discharge temperature	-
P04	Refrigerant high-pressure switch operation	-
P05	Power source error	-
P09	Indoor unit ceiling panel connector connection failure	-
P10	Indoor unit float switch operation	-
P11	Indoor unit drain pump error / Water heat exchanger unit anti-icing sensor error	-
P12	Indoor DC fan error	-
P13	Refrigerant circuit error (W MULTI / Models with suction bypass valve (85kW type) / Refrigerant circuit error (3 Way))	-
P15	Complete refrigerant gas depletion	-
P18	Bypass valve error	-
P19	Four-Way valve lock error (no detected 3WAY MULTI)	-
P20	Refrigerant high-pressure error	-
P22	Outdoor unit fan error	-
P23	Water heat exchanger unit interlock error (for only water heat exchanger unit)	-
P26	Clutch connection error	-
P30	Group control's sub unit error	-
P31	Group control error	-

Unidades ECOi EX 2 Way

Diagnosis display	Abnormality / Protection control	Problem
E06	Outdoor unit receiving failure from indoor unit	-
E12	Prohibit starting auto address setting	-
E15	Auto address alarm (a small number of indoor units)	-
E16	Auto address alarm (a large number of indoor units)	-
E20	No indoor unit during auto address setting	-
E21	Receiving failure of main system from sub system when link wiring is used for outdoor units	-
E22	Receiving failure of sub system from main system when link wiring is used for outdoor units	-
E24	Receiving failure of relay control unit from outdoor unit(s)	-
E25	Failure of outdoor unit address setting (duplicative)	-
E26	Inconsistencies in number of outdoor units	-
E29	Failure of outdoor unit to receive relay control unit	-
E30	Failure of transferring outdoor unit serial	-
E31	Wiring error between the P.C. board ([L-Pow], [HIC] wire)	-
F04	Compressor 1 discharge temperature sensor abnormal [DISCH1]	-
F05	Compressor 2 discharge temperature sensor abnormal [DISCH2]	-
F06	Outdoor unit heat exchanger 1 gas (inlet) temperature sensor abnormal [EXG1]	-
F07	Outdoor unit heat exchanger 1 liquid (outlet) temperature sensor abnormal [EXL1]	-
F08	Outdoor temperature sensor abnormal [TO]	-
F12	Compressor inlet temperature sensor abnormal [SCT]	-
F14	Supercooling gas temperature sensor abnormal [SCG]	-
F16	High pressure sensor abnormal, high-load [HPS]	-
F17	Low pressure sensor abnormal [LPS]	-
F23	Outdoor unit heat exchanger 2 gas (inlet) temperature sensor abnormal [EXG2]	-
F24	Outdoor unit heat exchanger 2 liquid (outlet) temperature sensor abnormal [EXL2]	-
F31	Outdoor unit nonvolatile memory (EEPROM) error	-
H01	Compressor 1 abnormal current values	Overcurrent
H03	Compressor 1 CT sensor disconnected, short-circuit	-
H05	Compressor 1 discharge temperature sensor disconnected	-
H06	Low pressure abnormal lowering	-
H07	Oil loss - error	-
H08	Oil sensor (connection) error 1	-

Diagnosis display	Abnormality / Protection control	Problem
H11	Compressor 2 abnormal current values	Overcurrent
H13	Compressor 2 CT sensor disconnected, short-circuit	-
H15	Compressor 2 discharge temperature sensor disconnected	-
H21	Compressor 2 HIC alarm	-
H27	Oil sensor (connection) error 2	-
H31	Compressor 1 HIC alarm	-
L04	Outdoor unit address settings duplicated	-
L05	Indoor unit priority duplicated (for priority indoor)	-
L06	Indoor unit priority duplicated (not for priority indoor) and outdoor unit	-
L10	Outdoor unit capacity settings not made	-
L17	Inconsistencies in outdoor unit models	-
L18	4-way valve coil disconnected, line disconnected	-
P03	Compressor 1 discharge temperature error	-
P04	Actuation of high pressure switch	-
P05	Compressor 1 open-phase detection	-
P11	Cooling water freeze	Chiller
P14	Actuation of O2 sensor	-
P15	Compressor 2 open-phase detection	-
P16	Compressor 1 secondary overcurrent	-
P17	Compressor 2 discharge temperature error	-
P19	Compressor 2 start failure	Compressor lock / Compressor wiring open-phase / DCCT failure
P20	High load	Forgot to open valves
P22	Outdoor unit fan1 failure	IPM damage / Overcurrent / Inverter failure / DC fan lock / Hole IC open-phase
P23	Inter lock not cancellation	Chiller
P24	Outdoor unit fan2 failure	IPM damage / Overcurrent / Inverter failure / DC fan lock / Hole IC open-phase
P26	Compressor 2 secondary overcurrent	-
P29	Compressor 1 start failure	Compressor lock / Compressor wiring open-phase / DCCT failure

Unidades ECOi EX 3 Way

Diagnosis display	Abnormality / Protection control	Problem
E06	Some indoor units does not respond to outdoor unit	-
E12	Auto address failed to start	-
E15	Fewer indoor units are found in auto addressing than the setting on outdoor PCB	-
E16	More indoor units are found in auto addressing than the setting on outdoor PCB	-
E20	No indoor unit responded in auto addressing	-
E24	No response from sub outdoor unit	-
E25	The outdoor unit address is duplicating	-
E26	The number of responding outdoor units does not match with the setting on the main outdoor unit	-
E29	No response from main outdoor unit	-
E31	Error in communication inside outdoor unit control box	-
F04	Compressor 1 discharge temperature sensor has failure (DISCH1)	-
F05	Compressor 2 discharge temperature sensor has failure (DISCH2)	-
F06	Outdoor unit heat exchanger 1 gas temperature sensor has failure (EXG1)	-
F07	Outdoor unit heat exchanger 1 liquid temperature sensor has failure (EXL1)	-
F08	Outdoor temperature sensor has failure (TO)	-
F12	Compressor inlet temperature sensor has failure (SCT)	-
F14	Subcooling heat exchanger temperature sensor has failure (SCG)	-
F16	High pressure sensor has failure (HPS)	-
F17	Low pressure sensor has failure (LPS)	-
F23	Outdoor unit heat exchanger 2 gas temperature sensor has failure (EXG2)	-
F24	Outdoor unit heat exchanger 2 liquid temperature sensor has failure (EXL2)	-
F31	EEPROM on outdoor unit PCB has failure	-
H01	Compressor 1 primary current is overcurrent	-
H03	Compressor 1 current sensor is disconnected or shorted	-
H05	Compressor 1 discharge temperature sensor is disconnected, shorted or misplaced	-
H06	Low pressure sensor value is too low	-
H07	Compressor or refrigerant circuit has low oil	-
H08	Compressor 1 oil temperature sensor has failure (OIL1)	-
H11	Compressor 2 primary current is overcurrent	-

Diagnosis display	Abnormality / Protection control	Problem
H13	Compressor 2 current sensor is disconnected or shorted	-
H15	Compressor 2 discharge temperature sensor is disconnected, shorted or misplaced	-
H21	Compressor 2 HIC has failure	HIC is overcurrent or overheat / VDC is undervoltag
H27	Compressor 2 oil temperature sensor has failure (OIL2)	-
H31	Compressor 1 HIC has failure	HIC is overcurrent or overheat / VDC is undervoltag
L04	Duplicate system address setting on outdoor units	-
L10	Capacity setting of outdoor unit is not correct	-
L11	Incorrect wiring of remote group control wiring (in case of shared solenoid valve)	-
L17	Model mismatch between outdoor units	-
P03	Compressor 1 discharge temperature is too high	-
P04	High pressure switch is activated	-
P05	Compressor 1 AC power supply has abnormal	-
P11	Cooling water freeze	-
P14	O2 sensor has activated	-
P15	Compressor 2 AC power supply has abnormal	-
P16	Compressor 1 secondary current is overcurrent	-
P17	Compressor 2 discharge temperature is too high	-
P19	Compressor 2 start failure	Compressor 2 is missing phase
P22	Outdoor unit fan motor has failure	-
P25	High pressure is out of compressor operating range	-
P26	Compressor 2 secondary current is overcurrent	-
P27	Low pressure is out of compressor operating range	-
P29	Compressor 1 start failure	Compressor 1 is missing phase

Unidades Mini ECOi

Diagnosis display	Abnormality / Protection control	Problem
C17	Indoor unit does not respond to central control equipment	-
E01	Indoor unit does not respond to remote controller	-
E02	Remote controller is having error in sending serial communication signal	-
E03	Remote controller does not respond to indoor unit	-
E04	Outdoor unit does not respond to indoor unit	-
E06	Some indoor units does not respond to outdoor unit	-
E08	Indoor unit address is duplicating	-
E09	Two or more remote controllers are set as main on R1-R2 link	-
E12	Auto address failed to start	-
E14	Two or more indoor units are set as main, in the group controlled indoor units	-
E15	Fewer indoor units are found in auto addressing than the setting on outdoor PCB	-
E16	More indoor units are found in auto addressing than the setting on outdoor PCB	-
E18	No response from sub indoor to the main indoor unit in group control wiring	-
E20	No indoor unit responded in auto addressing	-
E31	Error in communication inside outdoor unit control box	-
F01	Indoor unit heat exchanger liquid temperature sensor has failure (E1)	-
F02	Indoor unit heat exchanger temperature sensor has failure (E2)	-
F03	Indoor unit heat exchanger gas temperature sensor has failure (E3)	-
F04	Compressor discharge temperature sensor has failure (DISCH)	-
F06	Outdoor unit heat exchanger gas temperature sensor has failure (EXG)	-
F07	Outdoor unit heat exchanger liquid temperature sensor has failure (EXL)	-
F08	Outdoor temperature sensor has failure (TO)	-
F10	Indoor suction air (room) temperature sensor has failure (TA)	-
F11	Indoor discharge air temperature sensor has failure (BL)	-
F12	Compressor inlet temperature sensor has failure (SCT)	-

Diagnosis display	Abnormality / Protection control	Problem
F14	Subcooling heat exchanger temperature sensor has failure (SCG)	-
F16	High pressure sensor has failure (HPS)	-
F17	Low pressure sensor has failure (LPS)	-
F29	EEPROM on indoor unit PCB has failure	-
F31	EEPROM on outdoor unit PCB has failure	-
H01	Compressor primary current is overcurrent	-
H02	PFC is overcurrent or VDC is overvoltage (single phase only)	-
H03	Compressor current sensor is disconnected or shorted	-
H05	Compressor discharge temperature sensor is disconnected, shorted or misplaced (DISCH)	-
H06	Low pressure sensor value is too low	-
H31	Compressor HIC has failure	HIC is overcurrent or overheat. VDC is undervoltage or overvoltage
L01	Indoor unit address setting has error	No main indoor unit in group control
L02	Indoor unit model does not match with the outdoor unit model (multi-split/mini-split)	-
L03	Two or more indoor units are set as main in group control	-
L04	Duplicate system address setting on outdoor units	-
L05	Two or more indoor units are set as priority indoor unit (priority indoor unit)	-
L06	Two or more indoor units are set as priority indoor unit (non-priority indoor unit)	-
L07	Group control wiring is detected for indoor unit set as individual control	-
L08	Indoor unit address is not set	-
L09	Capacity setting of indoor unit is not correct	-
L10	Capacity setting of outdoor unit is not correct	-
L13	Indoor unit model does not match with outdoor unit	-
L17	Model mismatch between outdoor units	-
L18	4-way valve has failure	-
P01	Thermal protector for indoor unit fan motor is activated	-
P03	Compressor discharge temperature is too high	-
P04	High pressure switch is activated	-
P05	AC power supply has abnormal	-
P09	Connection to the panel of indoor unit is not good	-

Diagnosis display	Abnormality / Protection control	Problem
P10	Float switch of drain pan safety is activated	-
P11	Drain pump failure or locked rotor	-
P12	Indoor unit fan inverter protection control is activated	-
P14	O2 sensor has activated	-
P16	Compressor secondary current is overcurrent	-
P20	Too high load in refrigerant circuit	-
P22	Outdoor unit fan motor has failure	-
P29	Compressor start failure	Compressor is missing phase or reverse phase
P31	Other indoor unit in group control has an alarm	-

Unidades Big PACi

Diagnosis display	Abnormality / Protection control	Problem
E01	Remote controller reception error	-
E02	Remote controller transmission error	-
E03	Error in indoor unit receiving signal from remote controller (central)	-
E04	Error in indoor unit receiving signal from the outdoor unit	-
E05	Error in indoor unit transmitting signal to the outdoor unit	-
E06	Outdoor unit failed to receive serial communication signals from indoor unit	-
E08	Duplicate indoor unit address settings error	-
E09	More than one remote controller set to main error	-
E12	Automatic address setting start is prohibited while auto-address setting in progress	-
E14	Main unit duplication in simultaneous-operation multi control	Detected outdoor unit
E15	Automatic address alarm	The total capacity of indoor units is too low
E16	Automatic address alarm	The total capacity of indoor units is too high or the total number of indoor units is too many
E18	Faulty communication in group control wiring	-
E20	Connection problem of indoor/outdoor units	-
F04	Compressor discharge temperature sensor (TD) trouble	-
F06	Inlet temperature sensor (C1) in heat exchanger trouble	-
F07	Intermediate temperature sensor (C2) in heat exchanger trouble	-
F08	Outdoor air temperature sensor (TO) trouble	-
F12	Compressor inlet suction temperature sensor (TS) trouble	-
F31	Outdoor unit nonvolatile memory (EEPROM) trouble	-
H01	Primary (input) overcurrent detected	-
H02	PAM trouble	-
H03	Primary current CT sensor (current sensor) failure	-
H31	HIC trouble	-
L04	Outdoor unit address duplication	-
L10	Outdoor unit capacity not set or invalid	-
L13	Indoor unit type setting error	-
L18	4-way valve operation failure	-
P03	Compressor discharge temperature trouble	-

Diagnosis display	Abnormality / Protection control	Problem
P04	High pressure trouble	-
P05	AC power supply trouble	-
P13	Alarm valve open	-
P14	O2 sensor detect	-
P15	Insufficient gas level detected	-
P16	Compressor overcurrent trouble	-
P22	Outdoor unit fan motor trouble	-
P29	Lack of INV compressor wiring, INV compressor actuation failure (including locked), DCCT failure	-
P31	Group control error	-

Unidades PACi NX

Diagnosis display	Abnormality / Protection control	Abnormality judgement	Protection operation	Problem	Check location
E04	Indoor / Outdoor abnormal communication	After operation for 1 minute	Indoor fan only operation can start by entering into force cooling operation	Indoor / Outdoor communication not establish	- Indoor / Outdoor wire terminal - Indoor / Outdoor PCB - Indoor / Outdoor connection wire
F04	Compressor temperature sensor abnormality	Continuous for 5s	-	Compressor temperature sensor open or short circuit	Compressor temperature sensor lead wire and connector
F06	Outdoor heat exchanger temperature sensor 1 abnormality	Continuous for 5s	-	Outdoor heat exchanger temperature sensor 1 open or short circuit	Outdoor heat exchanger temperature sensor 1 lead wire and connector
F08	Outdoor air temperature sensor abnormality	Continuous for 5s	-	Outdoor air temperature sensor open or short circuit	Outdoor air temperature sensor lead wire and connector
H01	Indoor high pressure protection	-	-	Indoor high pressure protection (Heating)	- Check indoor heat exchanger - Air filter dirty - Air circulation short circuit
H02	Power factor correction (PFC) circuit protection	4 times happen within 20 minutes	-	Power factor correction circuit abnormal	Outdoor PCB faulty
H03	Outdoor current transformer (CT) abnormality	-	-	Current transformer faulty or compressor faulty	Outdoor PCB faulty or compressor faulty
L18	4-way valve switching abnormality	4 times happen within 30 minutes	-	4-way valve switching abnormal	4-way valve - Lead wire and connector
P03	Compressor overheating protection	4 times happen within 20 minutes	-	Compressor overheat	Insufficient refrigerant
P04	Outdoor cooling high pressure protection	4 times happen within 20 minutes	-	Cooling high pressure protection	- Check refrigeration system - Outdoor air circuit
P05	Indoor / Outdoor misconnection abnormality	-	-	Indoor and outdoor rated voltage different	Indoor and outdoor units check

Diagnosis display	Abnormality / Protection control	Abnormality judgement	Protection operation	Problem	Check location
P07	Power transistor module overheating protection	4 times happen within 30 minutes	-	Power transistor module overheat	· PCB faulty · Outdoor air circuit (fan motor)
P15	Refrigeration cycle abnormality	2 times happen within 20 minutes	-	Refrigeration cycle abnormal	· Insufficient refrigerant or valve close
P16	Outdoor direct current (DC) peak detection	Continuous happen for 7 times	-	Power transistor module current protection	· Power transistor module faulty os compressor lock
P22	Outdoor fan motor mechanism lock	2 times happen within 20 minutes	-	Outdoor fan motor lock or feedback abnormal	· Outdoor fan motor lead wire and connector · Fan motor lock or block
P29	Compressor abnormal revolution	4 times happen within 20 minutes	-	Compressor abnormal revolution	· Power transistor module faulty os compressor lock

Panasonic



airzonecontrol.com

Marie Curie, 21
29590 Málaga
Spain

v. 101

