

# UFBA

**COMPLEXO FÍSICA QUÍMICA - FEDERAÇÃO**

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**SALVADOR – BAHIA – BRASIL**

**SISTEMA AR CONDICIONADO, VENTILAÇÃO, EXAUSTÃO MECÂNICA**

## **MEMORIAL DESCRITIVO**

**RESPONSÁVEL TÉCNICO:**

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Projeto Executivo.

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## 2. APRESENTAÇÃO

### 2.1. INTRODUÇÃO

Contratar empresa **INSTALADORA** para montagem do sistema de **AR CONDICIONADO, VENTILAÇÃO, EXAUSTÃO MECÂNICA** do **COMPLEXO FÍSICA QUÍMICA DA UFBA**, situado na Avenida Adhemar de Barros, s/n, Ondina, Salvador, Bahia, Brasil.

### 2.2. OBJETIVO

Fornecimento de uma instalação de **AR CONDICIONADO, VENTILAÇÃO, EXAUSTÃO MECÂNICA**, englobando o fornecimento de todos os equipamentos, materiais, acessórios e mão de obra, inclusive aqueles outros, aqui não especificados claramente; mas, indispensável ao perfeito funcionamento do sistema.

### 2.3. PRAZO

Todos os serviços deverão ser executados no prazo estabelecido segundo proposta da empresa **INSTALADORA**.

### 2.4. ACOMPANHAMENTO DA OBRA

Nossa empresa poderá acompanhar os serviços de instalação mediante contratação.

Neste trabalho não previmos visita a obra, análise de propostas de fornecedores, ou outros serviços que não sejam exclusivamente referentes a elaboração do projeto.

### 2.5. TESTE, AJUSTE E BALANCEAMENTO

Após instalação dos serviços contratados e empresa **INSTALADORA** obrigatoriamente deverá realizar os **testes** operacionais, desenvolver os **ajustes** que se fizerem necessários, e promover o **balanceamento** de todo o sistema os serviços para atender as premissas do projeto de **AR CONDICIONADO**.

### 2.6. RUÍDOS E VIBRAÇÕES

Todos os equipamentos devem ser apoiados sobre calços / coxins de borracha de neoprene.

Todos os ventiladores / exaustores devem ser conectados com juntas flexíveis.

Qualquer anormalidade após a instalação deverá ser corrigida pela empresa **INSTALADORA** com a contratação de empresa especialista em serviços de **ACÚSTICA**, sob sua orientação e responsabilidade.

Quaisquer dúvidas sobre a solução adotada neste projeto referente a **ACÚSTICA** sugerimos que a empresa **INSTALADORA** contrate consultoria de especialista na área de ruído e/ou vibração, sob sua responsabilidade.

### 2.7. GARANTIA

A **GARANTIA** da instalação será pelo período de 3 (três) meses após o início da operação do sistema.

A **GARANTIA** dos equipamentos será regida segundo a contratação junto ao fabricante.

### 2.8. MANUTENÇÃO

Sugerimos que o **CLIENTE** contrate os serviços de **MANUTENÇÃO** junto a empresa **INSTALADORA** do sistema de **AR CONDICIONADO**.

## **2.9. DOCUMENTAÇÃO**

A empresa **INSTALADORA** deverá fornecer as plantas das instalações executadas ("as built" – como construído), bem como os catálogos e **CERTIFICADOS de GARANTIA** dos fabricantes das máquinas e equipamentos;

## **2.10. DIREITOS AUTORAIS**

Este documento é de propriedade de **Mário Sérgio Pintos de Almeida**, engenheiro mecânico, **CREA NACIONAL 220098091-4**, e não pode ser modificado ou copiado sem autorização do autor, sendo às violações sujeitas às sanções previstas na LEI nº. 9.610 de 19 de fevereiro de 1.998 dos **DIREITOS AUTORAIS**.

## **2.11. ENCARGOS da INSTALADORA**

São encargos da empresa **INSTALADORA**, responsável pela execução da instalação do **AR CONDICIONADO, VENTILAÇÃO E EXAUSTÃO MECÂNICA**, objeto do presente projeto:

- 2.11.1.** Efetuar levantamento minucioso das condições locais em confronto com o projeto apresentado;
- 2.11.2.** Certificar-se de que os cálculos apresentados estão compatíveis com seus produtos de fabricação própria;
- 2.11.3.** Conferir o dimensionamento de todo o projeto apresentado, contestando-o por escrito onde achar que existem problemas de dimensionamento, ou má aplicação de equipamentos;
- 2.11.4.** A responsabilidade técnica das instalações será assumida pela empresa **INSTALADORA**;
- 2.11.5.** Não alterar especificações de materiais, equipamentos, bitolas etc. sem o consentimento por escrito do **CONTRATANTE** ou sua **FISCALIZAÇÃO**;
- 2.11.6.** Transporte horizontal e vertical de todo e qualquer equipamento;
- 2.11.7.** Montagem de toda instalação com pessoal habilitado para tal sobre supervisão de engenharia competente;
- 2.11.8.** Colocar a instalação em operação realizando os ajustes necessários;
- 2.11.9.** Fornecer projeto executivo detalhado antes do início das instalações com a especificação dos equipamentos e materiais a serem fornecidos e instalados.

## **3. CARACTERÍSTICAS DO PROJETO**

### **3.1. DESENHOS**

Faz parte do presente **MEMORIAL DESCRITIVO** um conjunto de desenhos conforme relação:

Nomenclatura	Descrição
AFQF-PE-07-20-AVAC-GER-001-R0.dwg	Planta baixa térreo ala A/B
AFQF-PE-07-20-AVAC-GER-002-R0.dwg	Planta baixa 1º pavimento ala A/B
AFQF-PE-07-20-AVAC-GER-003-R0.dwg	Planta baixa 2º pavimento ala A/B
AFQF-PE-07-20-AVAC-GER-004-R0.dwg	Cobertura ala A/B
AFQF-PE-07-20-AVAC-GER-005-R0.dwg	Térreo, 1º e 2º pavimento, cobertura , ala A/B

### 3.2. MEMÓRIA DE CÁLCULO

Todos os ambientes foram dimensionados pelo programa da **CARRIER, HAP, Hourly Analysis Program, version 5.11.**

Os resultados da carga térmica encontram-se resumidamente ao final deste documento.

### 3.3. DESCRIÇÃO GERAL DA INSTALAÇÃO

Trata-se de uma instalação de **AR CONDICIONADO, VENTILAÇÃO, EXAUSTÃO MECÂNICA.**

O sistema de climatização será realizado com aparelhos split e renovação de ar segundo orientação da **ANVISA.**

Adotamos caixa de ventilação com filtragem G4 + M5 para ventilação com ar exterior.

O acionamento das caixas de ventilação será realizado a partir de chave de partida instalada a 1,5 m de altura localizadas conforme projeto.

Para os ambientes de laboratório foram projetados sistemas de ventilação e exaustão mecânica com caixas de ventilação equipadas filtros G4 + M5, coifas e capelas de exaustão conectadas a exaustores mecânicos axiais com rotor limit load.

A ventilação mecânica com dutos de chapa galvanizada TDC, e os sistema de exaustão mecânica com dutos de chapa preta # 16 pintados, sem isolamento térmico.

O acionamento das caixas de ventilação e dos exaustores será realizado a partir de chave de partida instalada a 1,5 m de altura localizadas conforme projeto.

Para as coifas da cozinha adotamos coifas lavadoras conectadas a exaustores mecânicos do tipo centrifugo, rotor limit load, simples aspiração, arranjo 1.

A ventilação dos ambientes da cozinha com caixa de ventilação, rede de dutos de chapa galvanizada tipo TDC pintadas.

A exaustão mecânica das coifas com rede de dutos de chapa preta #16 termicamente isoladas com manta cerâmica.

Para o sistema de exaustão mecânica foram especificados diversos acessórios para atender a ABNT NBR 14518 para cozinhas industriais.

### 3.4. LOCALIZAÇÃO DA INSTALAÇÃO

Salvador, Bahia.

### 3.5. DADOS CLIMÁTICOS

Frequência anual de ocorrência: **1,0% e 99,0%**

Temperatura de bulbo seco no verão – **32,0°C**

Temperatura de bulbo úmido no verão – **26,3°C**

Altura considerada – 6,0 m

### 3.6. CONDIÇÕES INTERNAS

As condições internas podem ser visualizadas no resumo da carga térmica ao final deste documento.

## 4. EQUIPAMENTOS

### 4.1. SPLITS R410A

Unidades split operando com refrigerante R410A, segundo o modelo e capacidade frigorífica definida em planilha ao final deste documento.

A instalação deverá obedecer a **ABNT NBR 16655 partes 1, 2 e 3, e emendas**.

As unidades externas devem ser apoiadas sobre calços de borracha de neoprene especialmente desenvolvidos para a finalidade, ou calços de neoprene nas dimensões de 100 x 100 x 25 mm nos pés de apoio do equipamento.

Quando a instalação exigir suportes metálicos para as unidades externas estes devem ser certificados segundo a norma técnica acima citada.

Para instalação dos equipamentos obrigatoriamente consultar o Manual de Manutenção, Operação e Instalação do fabricante.

O ponto de força de alimentação elétrica definido na planilha deve ser disponibilizado pela Instaladora Elétrica junto a unidade externa com proteção elétrica individual através de disjuntor para cada equipamento.

A interligação elétrica entre a unidade interna e a unidade externa será executada pela empresa Instaladora de Ar Condicionado, sempre obedecendo as recomendações da **ABNT NBR 5410** relativamente aos condutores elétricos, proteção mecânica dos condutores elétricos, aterramento, caixas de passagens e outros detalhes técnicos necessários a boa instalação do equipamento.

A tubulação frigorífica deverá obedecer a bitola recomendada na planilha ao final do documento, e verificada pelo Instalador de Ar Condicionado no Manual de Operação, Manutenção e Instalação do fabricante.

Na comparação entre o projeto desenvolvido x Manual de Instalação e Manutenção do fabricante adotar prioritariamente a recomendação do fabricante.



Sempre verificar a aplicação de loops, tubos flexíveis, sifão simples, sifão duplo e sifão invertido recomendado no Manual do fabricante.

Para aplicação de linhas longas consulte o Manual do fabricante.

Os suportes aplicados na tubulação frigoríficas termicamente isoladas devem sempre preservar a integridade do isolamento térmico (não amarrar e comprimir o isolante térmico).

Recomendamos adotar os suportes de tubulação frigorífica desenvolvidos pelos fabricantes dos isolamentos térmicos.

As linhas frigoríficas devem ser termicamente isoladas com espuma elastomérica classe M de 19 mm, sendo que nas aplicações externas sujeitas aos raios solares e as intempéries aplicar tinta de proteção recomendada pelo fabricante ou papel alumínio com papel kraft betuminoso na espessura de 0,15 mm com selos e fitas de alumínio a cada 300 mm no máximo.

No projeto é solicitado ponto de drenagem no evaporador, sendo que recomendamos o isolamento térmico da tubulação na posição horizontal ou com pequena inclinação com espuma elastomérica de 10 mm de espessura.

Os equipamentos serão acionados com controle remoto sem fio.

#### **4.2. CAIXAS DE VENTILAÇÃO PLENUM FAN**

Gabinete em estrutura em perfis de alumínio de alta resistência e cantos plástico, painéis fabricados em chapa galvanizada com fecho rápido nas portas de acesso com pés para fixação no piso ou no teto através de tirantes.

Ventilador tipo “plenum fan”, de carga limitada, com pás curvadas para trás, alto desempenho e baixo nível de ruído, arranjo 4 conforme a norma AMCA (acoplamento direto).

Motor elétrico de indução trifásico de alto rendimento, TFVE, classe B, IP 55, fator de serviço 1,15, fabricado pela WEG, apoiado sobre calços amortecedores, equipado com gaveta para filtros do tipo removível.

Acessórios a serem integrados ao equipamento:

- Porta filtros tipo gaveta na aspiração, com remoção lateral com filtros G4;
- Pintura esmalte sintético;
- Flange de descarga;
- Contra flange de descarga e aspiração;
- Ligação flexível de descarga e aspiração;
- Coxins de borracha;
- Painéis isolados termo e acusticamente

Aplicação – ventilação de compensação das exaustões mecânicas

Dados técnicos – vide tabela ao final deste documento.

Fabricante referência – **BERLINER LUFT**

#### **4.3. VENTILADOR COM SISTEMA DE FILTRAGEM**

Equipamento composto por ventilador em linha modelo **MAXX** com sistema de filtragem de filtros **G4 + M5**.

Aplicação – ventilação de ar exterior segundo projeto.

Características técnicas segundo tabela ao final deste documento.

Acessórios: veneziana plástica auto fechante de saída 150 mm em ABS.

Fabricante de referência – **SICFLUX**

#### **4.4. INSUFLADOR SPLITVENT G4 + M5**

Insuflador de ar com filtro G4 + M5.

Aplicação – renovação de ar da Administração

Modelo – SPLITVENT

Vazão – 15 L/s

Motor – 17 W, 127 V, 60 Hz

Potência absorvida – 23 W

Pressão sonora – 45 db(A)

Conexão – 100 mm

Dimensões – 253 mm x 189 mm x 152 mm (P x A x L)

Nota – acionamento em conjunto com evaporador da climatização do ambiente.

Quantidade – 2 peças

Fabricante de referência – **SICFLUX**

#### **4.5. EXAUSTOR COMPACTO AXIAL**

Fabricado em ABS, circular, válvula anti retorno incorporado, motor elétrico com mancais de rolamento, protetor térmico.

Aplicação – segundo tabela ao final do documento

Modelo – SONORA 18

Vazão – 35 L/s

Pressão – 50 Pa

Motor – 22 W, 127 V, 60 Hz

Potência absorvida – 33 W

Pressão sonora – 33 db(A)

Conexão – duto de 125 mm

Acessórios: tubo flexível sem isolamento térmico, veneziana de saída de ar externa em ABS.

Nota – acionamento com o interruptor da luminária do sanitário.

Quantidade – 1 peça

Fabricante de referência – **SICFLUX**

#### **4.6. COIFA SEM FILTRO**

Coifa fabricada em chapa de aço inoxidável AISI 304, tipo 18/8, 2 B, soldadas de forma contínua em atmosfera neutra de argônio, bitola # 18, dreno de latão de Ø 3/4", saída com flange e contra flange de aço inoxidável bitola 1/8" com furos de 1/4" a cada 100 mm, junta de vedação com material não combustível e que assegure a estanqueidade, na espessura de 3/16", sustentação através de perfil acoplado a coifa com furação para passagem de tirante roscado, porcas, arruelas de aço inox # 304, na bitola de 3/8" fixo a laje de concreto com fixador parabolt da mesma bitola.

Aplicação – segundo tabela e medidas ao final do documento.

Modelo - caixa invertido instalada a 1,9 m de altura do piso, saída de acordo com tabela ao final do documento.

Sustentação:

- coifas de 1,2 m e 1,5 m – 4 (quatro) suportes;
- coifas de 3,6 m – 6 (seis) suportes.

#### **4.7. VENTILADOR AXIAL**

Aplicação – exaustão das coifas de laboratório.

Seleção – vide seleção ao final deste documento.

Ventilador vane axial com característica de carga limitada, carcaça longa construída em aço SAE 1010/1020 pintada, hélice fundida em alumínio perfil limit load, motor elétrico TFVE, 220 V/380 V, 60 Hz, IPW55, classe F, alto rendimento para operar com variador de frequência, fator de serviço 1,15, fabricação WEG, arranjo 9, rolamento para 40.000 horas, eixo em aço SAE 1045, mancais de ferro fundido providos de graxas, pintura eletrostática a pó.

#### **ACESSÓRIOS DOS VENTILADORES**

Os ventiladores devem ser equipados com os seguintes acessórios:

- porta de inspeção;
- lubrificação externa;
- flanges e contra flanges na sucção e descarga;
- junta flexível na sucção e descarga;

- suporte de montagem horizontal;
- calços de neoprene;
- olhais de içamento;
- polias, correias, esticador de correias com parafuso sem fim;
- protetor de polias e correias.

## 5. SISTEMAS DE COZINHAS INDUSTRIAIS

### 5.1. COIFA LAVADORA

Coifa fabricada em chapa de aço inoxidável AISI 304, tipo 18/8, 2 B, soldadas de forma contínua em atmosfera neutra de argônio, bitola # 18, com sistema de lavagem tipo “wash pull” com bomba centrífuga de aço inox, colarinho (eliminador de gotas) do tipo “demister” em aço inoxidável. Hidráulica interna em aço inoxidável, bicos pulverizadores em latão, aglomeradores de partículas “baffles” do tipo rotativo com palhetas e cubo em alumínio com rolamentos blindados de esferas. Iluminação do tipo “tartaruga” a prova de tempo, sistema dosador de detergente, reservatório de detergente, drenagem automática de condensados, saída com flange e contra flange de aço inoxidável bitola 1/8” com furos de 1/4” a cada 100 mm, junta de vedação com material não combustível e que assegure a estanqueidade, na espessura de 3/16”, sistema de sustentação com presilhas, tirantes roscados, porcas, arruelas dimensionados e fornecidos pelo fabricante.

Notas:

- 1ª) Previmos a perda de carga de 200 Pa na coifa lavadora fabricada pela **CAPMETAL e REFRIN**.
- 2ª) Para as coifas da **MELTING** a perda de carga do exaustor deve ser ajustada, devido a perda de carga da coifa ser de 350 Pa.
- 3ª) A coifa deverá ser equipada com quadro elétrico que contemple a partida do motor elétrico do lavador, proteção das válvulas solenoides, automação da operação das válvulas, automação do sistema de aspersão de detergente.

Aplicação – Nutrição.

Características – segundo tabela ao final do documento.

### 5.2. DUTOS DE CHAPA PRETA

Dutos de exaustão fabricados em chapa de aço preta, bitola #16, ou aço inoxidável, bitola #18, soldado tanto nas juntas transversais como longitudinais de união entre as diferentes seções. Para as curvas redondas adotar  $r/D = 1,5$ , sendo as curvas de 90º com 5 gomos, 60º com 4 gomos e 45º com 3 gomos, e para as curvas retangulares, ou quadradas,  $r/W = 1,5$ , ambas sem veios direcionais internos.

Os dutos montados sem depressões devem possuir declividade de 1% em direção a coifas;

A sustentação dos dutos será realizada por perfis metálicos pintados e dimensionados para atender às necessidades estruturais e de limpeza nos mesmos;

Os dutos, suportes e acessórios devem ser pintados com tinta autoextinguível, à base de resina de alumínio silicone com 50% de sólidos por peso. Atenderá norma Petrobrás N-1513;

Para regulação da vazão nas coifas poderá ser utilizado damper de regulação, tipo JNB da TROX, junto ao colarinho das coifas;

O ponto inferior de depressões e de trechos de dutos verticais ou quaisquer outros pontos de acúmulo de gordura devem ser providos de drenos tamponados para recolhimento da mesma, com facilidade de acesso para limpeza que garanta estanqueidade e resistência ao fogo no mínimo igual às do duto;

Todos os dutos devem ser isolados com manta de fibra cerâmica, 38 mm de espessura, densidade de 96 kg/m<sup>3</sup>, modelo **FYREWRAP da UNIFRAX**.

### 5.3. AMORTECEDOR DE VIBRAÇÃO

A caixa de ventilação deve ser montada sobre amortecedores de vibração tipo coxins de neoprene da **VIBRASTOP**, e o exaustor sobre coxins de mola;

### 5.4. PORTAS DE INSPEÇÃO

Portas de inspeção para efeito de limpeza interna dos dutos distanciadas no máximo a cada 4.000 mm lineares, na dimensão mínima de 300 x 600 mm, instaladas nas laterais dos dutos, devendo sua borda inferior distarem no mínimo de 40 mm de todas as bordas externas do duto ou das conexões;

As portas de inspeção devem ser construídas com o mesmo material dos dutos, sendo providas de juntas de vedação estanques e com material não combustível. As ferragens das portas, tais como trincos, parafusos, porcas, e outros devem ser fabricados em aço carbono ou ao inoxidável, e não devem perfurar as paredes dos dutos;

O posicionamento dos colarinhos ao longo dos dutos deve permitir a instalação e a retirada dos parafusos utilizados na fixação dos flanges, sendo vedado o uso de parafusos auto atarrachantes e rebites;

### 5.5. JUNTA FLEXÍVEL

Juntas flexíveis para descarga e sucção dos dutos de chapa preta fabricada com material incombustível estanque a líquidos na superfície interna e com características próprias para operar em equipamento dinâmico, sendo que, suas emendas longitudinais, além de estanques, devem ser transpassadas de no mínimo 75 mm, resistentes ao fogo no mínimo por 1 hora, tipo lona industrial ENGESAL, tecido de fibra mineral, modelo ENGETEX AL-13 de espessura 0,25 mm.

### 5.6. DAMPER CORTA FOGO

Montagem junto à saída de ar da coifa.

Modelo FKA-TI-BR com elemento fusível e chave fim de curso da **TROX**.

### 5.7. PROJETO VERTICAL

Dimensão segundo projeto para descarga de ar das coifas executado em chapa de aço preto # 14, olhais para fixação de tirantes em quatro lados, sistema interno de pingadeira, flange e contra flange, dimensionado para velocidade de descarga de 12,5 a 14 m/s.

## 5.8. EXAUSTOR MECÂNICO

Exaustor centrífugo, simples aspiração de pás planas inclinadas para trás, LIMIT LOAD conforme segue, e tabela ao final do documento.

Classe e arranjo: I – 1

Posição: horário, 90°, vertical superior.

Posição do motor: W

Acessórios: base com trilhos para motor, motor elétrico trifásico IPW 55, fator de serviço de 1,15, alto rendimento, 220 V, 60 Hz, classe F, polias e correias, protetor de polias e correias, flange e contra flange de descarga e entrada, porta de inspeção, bujão na voluta, base com amortecedores de borracha, junta flexível na descarga, pintura com primer alquídico óxido de ferro e acabamento com esmalte sintético na cor cinza Munsell N6.5, construção anti-centelhante (conforme norma AMCA), mancais e rolamentos selecionados para vida útil mínima de 40.000 horas, eixos em aço SAE 1045.

Fabricantes – **OTAM** ou **BERLINER LUFT**

## 6. REDE DE DUTOS

### 6.1. DUTOS PARA VENTILADORES MAXX

Dutos e conexões em PVC.

### 6.2. DUTOS PARA CAIXAS DE VENTILAÇÃO

Rede de dutos em chapa galvanizada tipo **TDC** que deverá obedecer às dimensões e o traçado do projeto.

O projeto de detalhamento dos dutos é responsabilidade da empresa Instaladora obedecendo estritamente às especificações e desenhos do projeto e ao estipulado na norma brasileira **ABNT NBR 16401 parte 1**.

Os dutos no ambiente, duto dentro de ambiente condicionado de outra zona, e sobre o forro pertencem a classe de vazamento 17 e devem ser de 20% a 30% ensaiados.

Os dutos externos ao ambiente condicionado e com filtragem fina pertencem a classe de vazamento 8 e devem ser 50% ensaiados.

Os dutos que atendem áreas estéreis e de baixa umidade (<45%) pertencem a classe de vazamento 4 e devem ser 100% ensaiados.

Os dutos do presente projeto pertencem a classe de pressão de **500 Pa**.

Os dutos conectados aos ventiladores, exaustores, caixas de ventilação e caixas de exaustão deverá ser através de juntas flexíveis construídas com fitas de aço galvanizado e poliéster (recoberto com uma camada de vinil). Uma cravação especial une as fitas de aço ao poliéster para dar uma perfeita vedação, fabricado pela **DEC**.

Todas as bocas de insuflamento e retorno de ar devem ser pintadas com tinta preta fosca, inclusive toda e qualquer superfície transparente pela grelha de retorno (alvenaria, dutos isolados, etc.).

A cor de todas as grelhas, venezianas e difusores construídos em alumínio serão anodizado natural, sem pintura de acabamento, ou segundo a escolha do **CLIENTE**.

Sempre que houver corte nas chapas galvanizadas aplicar tinta à base de cromato de zinco para evitar o surgimento de corrosão.

Aplicar em todas as juntas e chavetas selante acrílico para dutos.

### **6.3. DUTOS FLEXÍVEIS VENTILAÇÃO / EXAUSTÃO**

Os dutos flexíveis para aplicação em sistemas de ventilação e/ou exaustão mecânica devem ser fabricados com dupla camada de folha de alumínio e filme de poliéster laminado (unido) com adesivo de poliuretano de alta performance e arame de alto carbono com revestimento em bronze, de acordo com a norma NBR 16401. Aplicação segundo os manuais do fabricante.

Referência: **ALUDEC 60, MULTIVAC**.

### **6.4. DUTOS PARA COIFAS /CAPELAS DE EXAUSTÃO**

Os dutos para exaustão das coifas e capelas devem ser executados em chapa de aço inoxidável padrão ASTM, codificação ISO, espessura de 1 mm (#20) grau 304, superfície 2B.

Suportes em cantoneira de aço carbono suportados por tirantes roscados de aço galvanizado com fixação através de chumbadores parabolt.

Os dutos devem ser apoiados sobre a cantoneira de aço carbono com borracha de neoprene de ¼" de espessura.

### **6.5. DIFUSÃO DE AR**

Os componentes e acessórios das redes de dutos, tais como: grelhas, difusores, registros de ar, venezianas, portas acústicas, atenuadores de ruído, dampers de sobre pressão, registros de vazão constante estão especificados nos desenhos do projeto.

## **7. CARGAS ELÉTRICAS**

### **7.1. PONTOS DE FORÇA**

Aplicação – aparelhos split conforme tabela ao final do documento, e das chaves de partida direta para os conjuntos ventiladores MAXX / FILBOXRED.

O exaustor **SONORA 18** será acionado em conjunto com a luminária do sanitário.

Os renovadores de ar **SPLITVENT** devem ser acionados em conjunto com os evaporadores dos aparelhos split.

Tensão elétrica adotada – 3F + N + T / 220 V / 60 Hz

Total dos aparelhos split – 137,77 kW, com f.p. – 0,92 – **150 KVA**

### **7.2. PF-QE-0P-ALA-B**

3F + N + T / 220 V / 60 Hz

Caixas de ventilação CV-01 – 2 x 0,25 kW

Caixas de ventilação CV-02 – 4 x 1,5 kW

Caixas de ventilação CV-03 – 2 x 0,75 kW

Exaustor EX-01 – 2 x 0,37 kW

Exaustor EX-02 – 4 x 1,49 kW

Exaustor EX-03 – 2 x 1,12 kW

Total – 16,94 kW, f.p. – 0,92 – **18,41 kVA**

### **7.3. PF-QE-1P-ALA-B**

3F + N + T / 220 V / 60 Hz

Caixas de ventilação CV-01 – 4 x 0,25 kW

Exaustor EX-01 – 4 x 0,37 kW

Total – 2,48 kW, f.p. – 0,92 – **2,70 kVA**

### **7.4. PF-QE-2P-ALA-B**

3F + N + T / 220 V / 60 Hz

Caixas de ventilação CV-01 – 4 x 0,25 kW

Exaustor EX-01 – 4 x 0,37 kW

Total – 2,48 kW, f.p. – 0,92 – **2,70 kVA**

### **7.5. PF-QE-0P-INT**

3F + N + T / 220 V / 60 Hz

Caixas de ventilação CV-05 – 1 x 1,50 kW

Exaustor EX-04 – 1 x 1,10 kW

Exaustor EX-05 – 1 x 0,37 kW

Quadro elétrico coifa lavadora – 2 x 0,37 kW



Total – 3,71 kW, f.p. – 0,92 – **4,30 kVA**

## 7.6. QUADROS ELÉTRICOS – DADOS GERAIS

Os **QE's** receberão alimentação elétrica, trifásica com neutro e terra, diretamente do quadro elétrico de baixa tensão, QEBT, sendo as eletrocalhas, suportes, encaminhamento e os cabos alimentadores fornecidos pela empresa **INSTALADORA ELÉTRICA**, segundo projeto específico das instalações elétricas na tensão trifásica com neutro e terra de 220 V, 60 Hz.

A distribuição a partir do **QE's**, adiante descritos serão de responsabilidade da **INSTALADORA de AR CONDICIONADO, VENTILAÇÃO e EXAUSTÃO MECÂNICA**.

Todos os equipamentos elétricos, inclusive aqueles que não se encontram internamente nos quadros elétricos, tais como, os motores elétricos dos diversos climatizadores, devem ser capazes de suportar uma variação na tensão de fornecimento de energia elétrica de 10% para mais ou para menos da tensão nominal de projeto.

Sua construção será modular, em armários de chapa de aço #14 de elevada resistência e segurança, acabamento em tinta cinza RAL 7032 aplicadas em pó à base de epóxi por processo eletrostático.

As portas equipadas com manoplas e fechaduras.

- chaves comutadoras: desligado, manual;
- sinalizador verde para operação de cada motor elétrico;
- sinalizador vermelho para cada relé de sobrecorrente ou defeito operacional;
- monitoramento de energia elétrica tipo multimedidor Power Logic série PM 2000. Será equipado com display de LCD e porta RS 485;
- supressor de surto, OVR, 275 V, 40 kA, da ABB ou similar com proteção de 3 (três) fusíveis diazed de 16 A;
- sinalização de operação de energização do sistema;
- barramento de cobre pintado segundo a norma **ABNT**;

## 7.7. QE-0P-ALA-B

Sua modularidade deverá ser de 1.700 mm de altura x 600 mm de largura x 250 mm de profundidade.

Possuirá um rodapé de 100 mm do mesmo material do quadro com pintura na cor preta.

Deverão constar os seguintes acessórios:

- um disjuntor trifásico geral em caixa moldada, capacidade 100 A, ajustável de 63 a 100 A, capacidade de interrupção simétrica a ser dimensionado em conjunto com o projetista de Instalações Elétricas;
- partida direta com disjuntor motor e contator, com proteção para motor elétrico de cada **Caixa de Ventilação / Exaustor**, potência, capacidade conforme tabela ao final do documento;

Quantidade – **1 peça**

#### **7.8. QE-1P-ALA-B**

Sua modularidade deverá ser de 600 mm de altura x 600 mm de largura x 250 mm de profundidade.

Deverão constar os seguintes acessórios:

- um disjuntor trifásico geral em caixa moldada, capacidade 10 A, capacidade de interrupção simétrica a ser dimensionado em conjunto com o projetista de Instalações Elétricas;
- partida direta com disjuntor motor e contator, com proteção para motor elétrico de cada **Caixa de Ventilação / Exaustor**, potência, capacidade conforme tabela ao final do documento;

Quantidade – **1 peça**

#### **7.9. QE-2P-ALA-B**

Sua modularidade deverá ser de 600 mm de altura x 600 mm de largura x 250 mm de profundidade.

Deverão constar os seguintes acessórios:

- um disjuntor trifásico geral em caixa moldada, capacidade 10 A, capacidade de interrupção simétrica a ser dimensionado em conjunto com o projetista de Instalações Elétricas;
- partida direta com disjuntor motor e contator, com proteção para motor elétrico de cada **Caixa de Ventilação / Exaustor**, potência, capacidade conforme tabela ao final do documento;

Quantidade – **1 peça**

#### **7.10. QE-0P-INT**

Sua modularidade deverá ser de 600 mm de altura x 600 mm de largura x 250 mm de profundidade.

Deverão constar os seguintes acessórios:

- um disjuntor trifásico geral em caixa moldada, capacidade 16 A, capacidade de interrupção simétrica a ser dimensionado em conjunto com o projetista de Instalações Elétricas;
- 1 (um) sistema de partida direta com disjuntor motor e contator para proteção e acionamento do motor elétrico da **Caixas de Ventilação**, potência de 1,5 kW;
- 2 (dois) sistemas de partida direta com disjuntor motor e contator para proteção e acionamento do motor elétrico dos **Exaustores**, potência de 1,1 kW e 0,37 kW;
- 2 (dois) disjuntores trifásicos de 6 A, capacidade de corte de 20 kA, na tensão de 220/240V, pela norma NBR IEC 60947-2 para alimentação dos quadros elétricos **das Coifas lavadoras**;
- Intertravamento elétrico **entre a caixa de ventilação e exaustores mecânicos**;
- **interligação elétrica em série do termostato de segurança + botoeira soco desliga para desligar o exaustor e caixa de ventilação para cada coifa**;

- interligação elétrica **das chaves fim de curso do damper corta fogo para desligar o exaustor e caixas de ventilação para cada coifa;**
- prever relé auxiliar e fiação a borne **quando do acionamento de qualquer uma das chaves fim de curso para ser utilizada pelo sistema de prevenção de incêndio na cozinha;**
- disjuntor monofásico de 2 A, capacidade de corte de 10 kA, na tensão de 220/240V, pela norma IEC 947-2 + **contator para proteção das bobinas das válvulas solenoides de duas vias de alimentação de gás GLP em cada coifa;**
- disjuntor monofásico de 2 A, capacidade de corte de 10 kA, na tensão de 220/240V, pela norma IEC 947-2 + contator para **alimentação elétrica da sirene;**
- acionamento da sirene sempre que houver o acionamento do damper corta fogo, ou operação do termostato de segurança, ou acionamento da botoeira soco desliga;
- interligação elétrica entre a alimentação elétrica do atuador da **V2V GLP para desligar o exaustor e caixa de ventilação para cada coifa;**

Sistema de alimentação elétrica para cada **damper corta fogo;**

- um disjuntor monofásico de 2 A, capacidade de corte de 20 kA, na tensão de 220/240V, pela norma IEC 947-2 para alimentação de cada damper corta fogo (DCF);
- chave comutadora liga desliga (abrir e fechar o DCF), interligada em serie com o sinal do sensor externo de sensor de fumaça;
- bornes para receber sinal externo de detector de fumaça;
- sinalizadores LED para posição da chave fim de curso integrada no motor de cada DCF;

Fornecimento para instalação em campo na cozinha:

- botoeiras vermelha diâmetro de 40 mm, tipo cogumelo, NF, modelo acionado quando puxar;
- termostatos de segurança modelo **L4029E1029** para temperatura de corte de 93°C;
- válvulas de duas vias com bitola de acordo com projeto de GLP, 220 Vac, IPW65, atuador on-off;
- sirene 220 V de potência sonora elevada;

Quantidade – **1 peça**

#### **7.11. CHAVE PARTIDA DIRETA MONOFÁSICO**

Chave de partida direta em armário de ABS com olhais de fixação, equipada com: contator, fusíveis de proteção, botoeira liga desliga, sinalização de operação.

Aplicação – acionamento dos ventiladores de renovação de ar da linha MAXX, monofásicos 220 V, 60 Hz.

Potência – segundo tabela ao final do documento.

#### **7.12. CHAVE PARTIDA DIRETA TRIFÁSICO**

Chave de partida direta em armário de ABS com olhais de fixação, equipada com: contator, fusíveis de proteção, relé de sobrecorrente, botoeira liga desliga, sinalização de operação.

Aplicação – acionamento da caixa de ventilação CV-04 do Auditório na potência de 0,75 kW.

## 8. INSTALAÇÕES ELÉTRICAS e LÓGICAS

A instalação elétrica e lógica será composta de:

Eletrocalhas, perfilados e conexões galvanizados a fogo, interna e externamente, lisos com tampa e abas de encaixe, chapa 14 com 400 g/m<sup>2</sup> de galvanização;

Eletrodutos e curvas de 90º de aço galvanizados a fogo, tipo pesado com 400 g/m<sup>2</sup> de galvanização;

Eletrodutos PVC rígido pesado;

Caixas de derivação aparentes em alumínio fundido, à prova de tempo;

Condutores em cabos unipolares com isolamento de EPR, cobertura de EVA, tensão nominal de 0,6/1kV, norma NBR 13248;

Condutores de comando, tipo super flexível, condutor isolado (cabo) com PVC 450/750V, segundo NBR 6148;

Condutores dos sensores do tipo par trançado de 1,5 mm<sup>2</sup>, preto e vermelho, condutor isolado (cabo) com PVC 450/750V, segundo NBR 6148;

Condutor do bus de comunicação tipo cabo único triaxial blindado, 1,0 mm<sup>2</sup>, trançado de código de cores (vermelho, preto, verde);

A fixação dos eletrodutos aparentes será realizada com buchas plásticas, parafusos galvanizados AA, e braçadeiras tipo “D”;

A cada duas curvas deverá haver uma caixa de derivação, ou a cada 10 metros de eletroduto linear;

A conexão aos equipamentos será realizada com eletroduto flexível (seal tubo) fabricado de aço zincado, revestido externamente com polivinil clorídrico extrudado;

As conexões para seal tubo devem ser do tipo conector zincado, fabricados em latão laminado, rosca GAS, tipo macho fixo ou fêmea fixo;

Os condutores devem estar afastados no mínimo 300 mm dos condutores de lógica;

As conexões aos sensores, atuadores, pressostatos, chaves de fluxo, transdutores e outros acessórios de lógica e comando, podem ser interligados com condutores multipolares super flexíveis com isolamento e cobertura de PVC (identificação por cores), segundo NBR 7288, sem a necessidade de eletrodutos flexíveis.

A conexão as caixas de derivação de alumínio fundido, perfilados e eletrocalhas devem ser realizadas através de prensa cabo na bitola apropriada.

## 9. ANOTAÇÕES



## SELEÇÃO DE APARELHOS SPLIT

DADOS DE ENTRADA																		CAPACIDADE			ELÉTRICA				TUBULAÇÃO FRIGORÍFICA					EVAPORADOR (INTERNO)		CONDENSADOR (EXTERNO)				
f.s	CG	curvas	CE	desnível	teste CE>CC	setor	pav.	ambiente	área	CT	vazão insuf.	f.s.	CT corrigida	TAG	qtd	tag	cap. U.	cap. T.	potência	corrente	ciclo	disj.	gás	bitola	desnível	compr. Conv.¹	linhas longas **	vazão	L x A x P	peso	L x A x P	peso				
%	m	pç	m	m					m²	kW	btu/h	L/s	teste %	btu/h		UE UC	btu/h	btu/h	kW	kW	A	A	f / v	A	ø	m	m	m	L/s	mm	kgf	mm	kgf			
0,94	20	9	23	10	OK	P.Fisicajala A	0P	0P_A_FIS_LAB_AF_01	59,0	11,8	40.262	485	OK	15	49.256	PTI	2	UE UC 05_06	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,94	20	9	23	10	OK	P.Fisicajala A	0P	0P_A_FIS_LAB_AF_02	63,5	11,7	39.920	467	OK	15	48.839	PTI	2	UE UC 07_08	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,94	20	9	23	10	OK	P.Fisicajala A	0P	0P_A_FIS_LAB_INF_01	35,9	12,8	43.674	514	OK	0	46.461	PTI	1	UE UC 09	54.000	54.000	5,23	5,23	22,70	22,70	220/1F	40	R410A	3/8" x 3/4"	30	50	50	525	1.750 x 220 x 650	35,0	950 x 1.380 x 330	96,0
0,94	20	9	23	10	OK	P.Fisicajala A	0P	0P_A_FIS_LAB_INF_02	36,0	12,9	44.015	522	OK	0	46.824	PTI	1	UE UC 10	54.000	54.000	5,23	5,23	22,70	22,70	220/1F	40	R410A	3/8" x 3/4"	30	50	50	525	1.750 x 220 x 650	35,0	950 x 1.380 x 330	96,0
0,94	20	9	23	10	OK	P.Fisicajala A	0P	0P_A_FIS_PIBID	28,4	9,5	32.414	355	OK	0	34.483	PTI	1	UE UC 11	35.000	35.000	3,38	3,38	14,40	14,40	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,94	20	9	23	10	OK	P.Fisicajala B	0P	0P_A_FIS_S_EDIÇÃO_VIDEO	20,2	3,5	11.942	200	OK	35	17.151	PTI	1	UE UC 12	24.000	24.000	2,32	2,32	10,10	10,10	220/1F	30	R410A	3/8" x 5/8"	30	50	50	207	950 x 220 x 650	20,5	870 x 655 x 320	36,0
0,94	20	9	23	15	OK	P.Quimicajala B	0P	0P_B_QUI_LAB_ABS_ATOMICA	27,8	7,5	25.590	356	OK	0	27.223	PTI	1	UE UC 01	35.000	35.000	3,38	3,38	14,40	14,40	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,94	20	9	23	15	OK	P.Quimicajala B	0P	0P_B_QUI_LAB_CROMATOGRAFIA	48,6	10,1	34.461	413	OK	0	36.661	PTI	2	UE UC 02_03	24.000	48.000	2,32	4,64	10,10	20,20	220/1F	30	R410A	3/8" x 5/8"	30	50	50	207	950 x 220 x 650	20,5	870 x 655 x 320	36,0
0,94	20	9	23	15	OK	P.Quimicajala B	0P	0P_B_QUI_LAB_INFRA_VERMELHO	21,9	4,9	16.719	206	OK	0	17.786	PTI	1	UE UC 04	24.000	24.000	2,32	2,32	10,10	10,10	220/1F	30	R410A	3/8" x 5/8"	30	50	50	207	950 x 220 x 650	20,5	870 x 655 x 320	36,0
0,96	15	9	18	10	OK	P.Fisicajala A	1P	1P_A_FIS_LAB_AF_03	58,8	12,6	42.991	548	OK	10	49.261	PTI	2	UE UC 14_15	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	10	OK	P.Fisicajala A	1P	1P_A_FIS_LAB_AF_04	66,0	13,0	44.356	578	OK	10	50.825	PTI	2	UE UC 16_17	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	10	OK	P.Fisicajala A	1P	1P_A_FIS_LAB_AF_05	66,3	13,1	44.697	579	OK	10	51.216	PTI	2	UE UC 18_19	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	10	OK	P.Fisicajala A	1P	1P_A_FIS_LAB_AF_06	55,4	12,3	41.968	527	OK	10	48.088	PTI	2	UE UC 20_21	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	10	OK	P.Quimicajala B	1P	1P_B_QUI-S_TEC_AQ	19,1	6,8	23.202	328	OK	0	24.168	PTI	1	UE UC 13	35.000	35.000	3,38	3,38	14,40	14,40	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	5	OK	P.Fisicajala A	2P	2P_A_FIS_LAB_AF_07	58,5	13,1	44.697	545	OK	10	51.216	PTI	2	UE UC 25_26	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	5	OK	P.Fisicajala A	2P	2P_A_FIS_LAB_AF_08	66,9	13,7	46.744	591	OK	10	53.561	PTI	2	UE UC 27_28	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	5	OK	P.Fisicajala A	2P	2P_A_FIS_LAB_AF_09	67,1	13,7	46.744	586	OK	10	53.561	PTI	2	UE UC 29_30	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	5	OK	P.Fisicajala A	2P	2P_A_FIS_LAB_AF_10	55,5	12,8	43.674	529	OK	10	50.043	PTI	2	UE UC 31_32	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,96	15	9	18	5	OK	P.Quimicajala B	2P	2P_B_QUI_LAB_BALANÇAS	37,6	11,8	40.262	437	OK	0	41.939	PTI	1	UE UC 35	46.000	46.000	4,45	4,45	19,30	19,30	220/1F	40	R410A	3/8" x 5/8"	30	50	50	500	1.750 x 220 x 650	35,0	950 x 834 x 330	67,0
0,96	15	9	18	5	OK	P.Quimicajala B	2P	2P_B_QUI_LAB_MET_OTICOS	58,4	14,3	48.792	619	OK	0	50.825	PTI	2	UE UC 23_24	35.000	70.000	3,38	6,76	14,40	28,80	220/1F	30	R410A	3/8" x 5/8"	30	50	50	357	1.350 x 220 x 650	29,0	950 x 834 x 330	65,0
0,91	30	9	33	10	OK	Integração	1P	INT_1P_AUDITORIO	117,4	63,5	216.662	1.661	OK	0	238.090	K7I	6	UE UC 04_09	42.000	252.000	3,82	22,92	16,90	101,40	220/1F	40	R410A	3/8" x 5/8"	30	50	50	533	840 x 288 x 840	28,0	950 x 834 x 330	67,0
1,00	12	8	14	10	OK	Integração	1P	INT_1P_SALA_TECNICA	3,0	0,8	2.730	69	OK	0	2.730	HWI	1	UE UC 03	9.000	9.000	0,81	0,81	4,16	4,16	220/1F	10	R410A	3/8" x 1/4"	7	15	15	133	756 x 265 x 184	7,0	717 x 483 x 230	23,0
1,00	7	5	9	10	OK	Integração	0P	INT_0P_NUTRICIONISTA	3,6	1,1	3.753	57	OK	0	3.753	HWI	1	UE UC 01	9.000	9.000	0,81	0,81	4,16	4,16	220/1F	10	R410A	3/8" x 1/4"	7	15	15	133	756 x 265 x 184	7,0	717 x 483 x 230	23,0
1,00	12	5	14	10	OK	Integração	0P	INT_0P_REC_GENEROS	4,7	1,2	4.094	67	OK	0	4.094	HWI	1	UE UC 02	9.000	9.000	0,81	0,81	4,16	4,16	220/1F	10	R410A	3/8" x 1/4"	7	15	15	133	756 x 265 x 184	7,0	717 x 483 x 230	23,0
1,00	10	9	13	5	OK	Integração	2P	INT_2P_COPIADORA	16,0	4,5	15.354	206	OK	0	15.354	PTI	1	UE UC 10	17.000	17.000	1,57	1,57	6,70	6,70	220/1F	20	R410A	1/4" x 1/2"	15	30	30	207	950 x 220 x 650	20,5	770 x 545 x 288	36,0
1,00	10	9	13	5	OK	Integração	2P	INT_2P_D_A_FIS_PREVISÃO	11,4	2,9	9.895	166	OK	0	9.895	HWI	1	UE UC 11	12.000	12.000	1,09	1,09	5,08	5,08	220/1F	10	R410A	3/8" x 1/4"	7	15	15	167	756 x 265 x 184	9,0	717 x 483 x 230	26,0
1,00	10	9	13	5	OK	Integração	2P	INT_2P_D_A_QUI_PREVISÃO	12,4	3,1	10.577	166	OK	0	10.577	HWI	1	UE UC 12	12.000	12.000	1,09	1,09	5,08	5,08	220/1F	10	R410A	3/8" x 1/4"	7	15	15	167	756 x 265 x 184	9,0	717 x 483 x 230	26,0

## NOTAS EXPLICATIVAS

1)\* Para atender outros comprimentos convencionais, visualizar as bitolas corretas nos catálogos dos fabricantes.

2)\*\* Para instalações de linhas longas, visualizar as bitolas corretas e os componentes adicionais nos catálogos dos fabricantes.

3) O isolamento da tubulação, no interior do prédio, deverá ser executado em espuma elastomérica classe M, 19 mm de espessura.

4) No exterior a tubulação, deverá possuir revestimento flexível, com acabamento metálico para proteção mecânica e contra raios UV.

TAG	modelos	modelo	capacidade	fabricante
HWI	parede	inverter	9 a 22 kbtu/h	lg
K7I	de quatro vias	inverter	24 a 46 kbtu/h	lg
PTI	piso / teto	inverter	17 a 46 kbtu/h	lg
EAI	embutido	inverter	30 a 48 kbtu/h	daikin
HWC	parede	convencional	9 a 22 kbtu/h	carrier
K7C	de quatro vias	convencional	36 a 46 kbtu/h	carrier
PTC	piso / teto	convencional	36 a 56 kbtu/h	carrier
EAC	embutido	convencional	18 a 60 kbtu/h	carrier

## UFBA - INTERLIGAÇÃO, LAB. FÍSICA E QUÍMICA

setor	pav.	ambiente	VENTILAÇÃO											duto		
			TAG	modelo	diâmetro	vazão	PEED	filtros	potência	P.S.	tensão					
					mm	L/s	Pa		W	db(A)	F x V	vel. - m/s	L - mm	A - mm		
P.Física ala A	OP	OP_A_FIS_LAB_AF_01	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	OP	OP_A_FIS_LAB_AF_02	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	OP	OP_A_FIS_LAB_INF_01	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	OP	OP_A_FIS_LAB_INF_02	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	OP	OP_A_FIS_PIBID	VM_01	FILBOXRED_200	200	97,5	160	G4+M5	77	52	1F x 220					
P.Física ala B	OP	OP_A_FIS_S_EDIÇÃO_VIDEO	VM_03	FILBOXRED_100	100	15	160	G4+M5	77	38	1F x 220	7,60300250				
P.Química ala B	OP	OP_B_QUI_LAB_DEMONSTRAÇÃO	CV_01	BBF_315_4P	-	570	150	G4+M5	250	-	3F x 220					
P.Química ala B	OP	OP_B_QUI_LAB_ABS_ATOMICA	VM_02	FILBOXRED_150	150	60	150	G4+M5	77	44	1F x 220	7,60300250				
			CV_01	BBF_315_4P	-	570	200	G4+M5	250	-	3F x 220					
P.Química ala B	OP	OP_B_QUI_LAB_CROMATOGRAFIA	VM_02	FILBOXRED_150	150	60	150	G4+M5	77	44	1F x 220					
P.Química ala B	OP	OP_B_QUI_LAB_INFRA_VERMELHO	VM_02	FILBOXRED_150	150	45	160	G4+M5	77	44	1F x 220					
P.Química ala B	OP	OP_B_QUI_LAB_DID.QUIM.ORG_01	CV_02	BBF_450_4P	-	1.900	150	G4+M5	1.500	-	3F x 220	9,50	500	400		
			CV_02	BBF_450_4P	-	1.900	150	G4+M5	1.500	-	3F x 220	9,50	500	400		
			CV_03	BBF_400_4P	-	1.000	150	G4+M5	750	-	3F x 220	10,00	400	250		
P.Química ala B	OP	OP_B_QUI_LAB_DID.QUIM.ORG_03	CV_02	BBF_450_4P	-	1.900	150	G4+M5	1.500	-	3F x 220	9,50	500	400		
			CV_02	BBF_450_4P	-	1.900	150	G4+M5	1.500	-	3F x 220	9,50	500	400		
			CV_03	BBF_400_4P	-	1.000	150	G4+M5	750	-	3F x 220	10,00	400	250		
P.Física ala A	1P	1P_A_FIS_LAB_AF_04	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	1P	1P_A_FIS_LAB_AF_05	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	1P	1P_A_FIS_LAB_AF_06	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Química ala B	1P	1P_B_QUI-S_TEC_AQ	VM_02	FILBOXRED_150	150	60	150	G4+M5	77	44	1F x 220					
P.Química ala B	1P	Banheiro PCD, 5,4 m²	EX_06	SONORA_18	125	35	50	-	28	33	1F x 220					
P.Química ala B	1P	S.PREP.DE REAG. E LAVAGEM	CV_01	BBF_315_4P	-	570	150	G4+M5	250	-	3F x 220	7,60	300	250		
P.Química ala B	1P	LABORATÓRIO MULTIUSUÁRIO	CV_01	BBF_315_4P	-	570	150	G4+M5	250	-	3F x 220	7,60	300	250		
P.Química ala B	1P	LAB.DID.GERAL QUIM.INORG_09	CV_01	BBF_315_4P	-	570	150	G4+M5	250	-	3F x 220	7,60	300	250		
P.Química ala B	1P	LAB.DID.GERAL QUIM.INORG_11	CV_01	BBF_315_4P	-	570	150	G4+M5	250	-	3F x 220	7,60	300	250		
P.Física ala A	2P	2P_A_FIS_LAB_AF_07	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	2P	2P_A_FIS_LAB_AF_08	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	2P	2P_A_FIS_LAB_AF_09	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Física ala A	2P	2P_A_FIS_LAB_AF_10	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Química ala B	2P	2P_B_QUI_LAB_BALANÇAS	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220					
P.Química ala B	2P	2P_B_QUI_LAB_MET_OTICOS	VM_01	FILBOXRED_200	200	135	120	G4+M5	77	52	1F x 220	7,60300250				
			CV_01	BBF_315_4P	-	570	200	G4+M5	250	-	3F x 220					
P.Química ala B	2P	2P_B_QUI_LAB_DID.QUIM.ANAL_04	CV_01	BBF_315_4P	-	570	200	G4+M5	250	-	3F x 220	7,60	300	250		
P.Química ala B	2P	2P_B_QUI_LAB_DID.QUIM.ANAL_05	CV_01	BBF_315_4P	-	570	200	G4+M5	250	-	3F x 220	7,60	300	250		
P.Química ala B	2P	2P_B_QUI_LAB_DID.QUIM.ANAL_06	CV_01	BBF_315_4P	-	570	200	G4+M5	250	-	3F x 220	7,60	300	250		
Integração	1P	INT_1P_AUDITORIO	CV_04	BBF_400_4P	-	1.000	250	G4+M5	750	-	3F x 220	13,00600200				
Integração	OP	NUTRIÇÃO	CV_05	BBF_450_4P	-	1.560	300	G4+M5	1.500	-	3F x 220					
Integração	2P	INT_2P_COPIADORA	VM_02	FILBOXRED_150	150	30	160	G4+M5	77	44	1F x 220					
Integração	2P	INT_2P_D.A._FIS_PREVISÃO	VM_06	SPLITVENT	100	15	-	G4+M5	20	45	1F x 220					
Integração	2P	INT_2P_D.A._QUI_PREVISÃO	VM_06	SPLITVENT	100	15	-	G4+M5	20	45	1F x 220					





setor	pav.	ambiente	EXAUSTOR																		
			TAG	tipo	arr.	diâmetro mm	vazão L/s	PEED Pa	classe	vel.desc. m/s	rend. %	rotação rpm	pot.abs CV	vel.perif m/s	P.S. db(A)	motor kW	tensão F x V	duto			
																	vel. - m/s	L - mm	A - mm		
P.Física ala A	0P	OP_A_FIS_LAB_AF_01																			
P.Física ala A	0P	OP_A_FIS_LAB_AF_02																			
P.Física ala A	0P	OP_A_FIS_LAB_INF_01																			
P.Física ala A	0P	OP_A_FIS_LAB_INF_02																			
P.Física ala A	0P	OP_A_FIS_PIBID																			
P.Física ala B	0P	OP_A_FIS_S_EDIÇÃO_VIDEO																			
P.Química ala B	0P	OP_B_QUI_LAB_DEMONSTRAÇÃO	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Química ala B	0P	OP_B_QUI_LAB_ABS_ATOMICA	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Química ala B	0P	OP_B_QUI_LAB_CROMATOGRAFIA																			
P.Química ala B	0P	OP_B_QUI_LAB_INFRA_VERMELHO																			
P.Química ala B	0P	OP_B_QUI_LAB_DID.QUIM.ORG_01	EX_02	ARL	9	500	1.980	400	I	4,95	75,11	1.324	1,75	34,67	70	1,49	3 x 220 V	9,90	500	400	
			EX_02	ARL	9	500	1.980	400	I	4,95	75,11	1.324	1,75	34,67	70	1,49	3 x 220 V	9,90	500	400	
			EX_03	ARL	9	400	1.080	400	I	4,22	77,42	1.536	0,92	32,17	67	1,12	3 x 220 V	9,00	400	300	
P.Química ala B	0P	OP_B_QUI_LAB_DID.QUIM.ORG_03	EX_02	ARL	9	500	1.980	400	I	4,95	75,11	1.324	1,75	34,67	70	1,49	3 x 220 V	9,90	500	400	
			EX_02	ARL	9	500	1.980	400	I	4,95	75,11	1.324	1,75	34,67	70	1,49	3 x 220 V	9,90	500	400	
			EX_03	ARL	9	400	1.080	400	I	4,22	77,42	1.536	0,92	32,17	67	1,12	3 x 220 V	9,00	400	300	
P.Física ala A	1P	1P_A_FIS_LAB_AF_04																			
P.Física ala A	1P	1P_A_FIS_LAB_AF_05																			
P.Física ala A	1P	1P_A_FIS_LAB_AF_06																			
P.Química ala B	1P	1P_B_QUI-S_TEC_AQ																			
P.Química ala B	1P	Banheiro PCD, 5,4 m²																			
P.Química ala B	1P	S.PREP.DE REAG. E LAVAGEM	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Química ala B	1P	LABORATÓRIO MULTIUSUÁRIO	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Química ala B	1P	LAB.DID.GERAL QUIM.INORG_09	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Química ala B	1P	LAB.DID.GERAL QUIM.INORG_11	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Física ala A	2P	2P_A_FIS_LAB_AF_07																			
P.Física ala A	2P	2P_A_FIS_LAB_AF_08																			
P.Física ala A	2P	2P_A_FIS_LAB_AF_09																			
P.Física ala A	2P	2P_A_FIS_LAB_AF_10																			
P.Química ala B	2P	2P_B_QUI_LAB_BALANÇAS																			
P.Química ala B	2P	2P_B_QUI_LAB_MET_OTICOS	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Química ala B	2P	2P_B_QUI_LAB_DID.QUIM.ANAL_04	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Química ala B	2P	2P_B_QUI_LAB_DID.QUIM.ANAL_05	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
P.Química ala B	2P	2P_B_QUI_LAB_DID.QUIM.ANAL_06	EX_01	ARL	9	400	600	300	I	2,34	78,2	1.166	0,37	24,44	62	0,37	3 x 220 V	10,00	300	200	
Integração	1P	INT_1P_AUDITORIO																			
Integração	0P	NUTRIÇÃO	EX_04	RLS	1	400	1.000	500	I	7,81	78,99	1.526	0,94	31,96	69	1,10	3 x 220 V	11,43	350	250	
			EX_05	RLS	1	400	608	400	I	4,75	76,81	1.258	0,45	26,36	65	0,37	3 x 220 V	12,16	250	200	
Integração	2P	INT_2P_COPIADORA																			
Integração	2P	INT_2P_D.A._FIS_PREVISÃO																			
Integração	2P	INT_2P_D.A._QUI_PREVISÃO																			

## UFBA - INTERLIGAÇÃO, LAB. FÍSICA E QUÍMICA

setor	pav.	área	qtd.	fator	fator	ambiente	carga térmica		temp. ent.	temp. saída	vazão	carga	insuflação		carga térmica	
			pessoas				total	sensível	DB / WB	DB / WB	ar ext.	de	p/ m²	total	total	
		m²			L/s/pessoa		m²/TR	kW	kW	°C	°C	L/s	ponta	L/s/m²)	L/s	TR
P.Física ala A	OP	59,0	18	7,5	17,6	OP_A_FIS_LAB_AF_01	11,8	7,3	25,7 / 19,9	13,3 / 12,8	135	Apr 1500	8,22	485	3,36	40.262
P.Física ala A	OP	63,5	18	7,5	19,1	OP_A_FIS_LAB_AF_02	11,7	7,0	26,3 / 20,6	13,9 / 13,4	135	Feb 1400	7,35	467	3,33	39.920
P.Física ala A	OP	35,9	18	7,5	9,9	OP_A_FIS_LAB_INF_01	12,8	7,9	25,9 / 20,0	13,3 / 12,8	135	Jan 1700	14,32	514	3,64	43.674
P.Física ala A	OP	36,0	18	7,5	9,8	OP_A_FIS_LAB_INF_02	12,9	8,0	26,1 / 20,1	13,5 / 13,0	135	Jan 1400	14,50	522	3,67	44.015
P.Física ala A	OP	28,4	13	7,5	10,5	OP_A_FIS_PIBID	9,5	6,0	26,0 / 19,9	13,3 / 12,8	97	Feb 1500	12,50	355	2,70	32.414
P.Física ala B	OP	20,2	2	7,5	20,3	OP_A_FIS_S_EDIÇÃO_VIDEO	3,5	2,9	24,4 / 17,5	13,3 / 12,7	15	Apr 1300	9,90	200	1,00	11.942
P.Química ala B	OP	27,8	8	7,5	13,0	OP_B_QUI_LAB_ABS_ATOMICA	7,5	5,3	25,3 / 19,0	13,5 / 13,0	60	Jan 1500	12,80	356	2,13	25.590
P.Química ala B	OP	48,6	8	7,5	16,9	OP_B_QUI_LAB_CROMATOGRAFIA	10,1	8,0	24,6 / 17,9	13,2 / 12,6	60	Apr 1400	8,50	413	2,87	34.461
P.Química ala B	OP	21,9	6	7,5	15,7	OP_B_QUI_LAB_INFRA_VERMELHO	4,9	3,2	25,5 / 19,5	13,7 / 13,2	45	Dec 1600	9,40	206	1,39	16.719
P.Física ala A	1P	58,8	18	7,5	16,4	1P_A_FIS_LAB_AF_03	12,6	7,8	25,8 / 20,2	14,1 / 13,6	135	Dec 1500	9,32	548	3,58	42.991
P.Física ala A	1P	66,0	18	7,5	17,9	1P_A_FIS_LAB_AF_04	13,0	8,2	25,9 / 20,0	14,1 / 13,6	135	Jan 1500	8,75	578	3,70	44.356
P.Física ala A	1P	66,3	18	7,5	17,8	1P_A_FIS_LAB_AF_05	13,1	8,2	25,7 / 20,0	13,9 / 13,4	135	Dec 1500	8,73	579	3,72	44.697
P.Física ala A	1P	55,4	18	7,5	15,8	1P_A_FIS_LAB_AF_06	12,3	7,6	26,0 / 20,3	14,1 / 13,6	135	Jan 1600	9,52	527	3,50	41.968
P.Química ala B	1P	19,1	8	7,5	9,9	1P_B_QUI-S_TEC_AQ	6,8	4,7	25,1 / 18,8	13,1 / 12,5	60	Apr 1500	17,15	328	1,93	23.202
P.Física ala A	2P	58,5	18	7,5	15,7	2P_A_FIS_LAB_AF_07	13,1	8,2	26,0 / 20,0	13,5 / 13,0	135	Feb 1500	9,31	545	3,72	44.697
P.Física ala A	2P	66,9	18	7,5	17,2	2P_A_FIS_LAB_AF_08	13,7	8,8	25,9 / 19,8	13,6 / 13,1	135	Feb 1600	8,84	591	3,90	46.744
P.Física ala A	2P	67,1	18	7,5	17,2	2P_A_FIS_LAB_AF_09	13,7	8,8	25,9 / 19,8	13,4 / 12,9	135	Jan 1600	8,73	586	3,90	46.744
P.Física ala A	2P	55,5	18	7,5	15,2	2P_A_FIS_LAB_AF_10	12,8	7,9	26,1 / 20,1	13,6 / 13,2	135	Jan 1600	9,53	529	3,64	43.674
P.Química ala B	2P	37,6	18	7,5	11,2	2P_B_QUI_LAB_BALANÇAS	11,8	7,0	26,3 / 20,5	13,1 / 12,7	135	Feb 1700	11,62	437	3,36	40.262
P.Química ala B	2P	58,4	18	7,5	14,4	2P_B_QUI_LAB_MET_OTICOS	14,3	9,3	25,7 / 19,5	13,3 / 12,8	135	Feb 1600	10,60	619	4,07	48.792
Integração	1P	117,4	133	7,5	6,5	INT_1P_AUDITORIO	63,5	31,6	29,0 / 23,3	13,2 / 12,9	1.000	Feb 1500	14,15	1.661	18,06	216.662
Integração	1P	3,0	0	0,0	13,2	INT_1P_SALA_TECNICA	0,8	0,8	22,9 / 7,3	13,2 / 2,2	0	Nov 1800	23,07	69	0,23	2.730
Integração	OP	3,6	1	7,5	11,5	INT_OP_NUTRICIONISTA	1,1	0,8	24,9 / 18,4	13,1 / 12,5	7,5	Dec 1400	15,88	57	0,31	3.753
Integração	OP	4,7	1	7,5	13,8	INT_OP_REC_GENEROS	1,2	0,9	24,9 / 18,2	13,3 / 12,7	7,5	Jan 1400	14,18	67	0,34	4.094
Integração	2P	16,0	4	7,5	12,5	INT_2P_COPIADORA	4,5	3,4	24,9 / 18,3	13,0 / 12,4	30	Feb 1700	12,90	206	1,28	15.354
Integração	2P	11,4	2	7,5	13,8	INT_2P_D.A._FIS_PREVISÃO	2,9	2,3	24,8 / 18,0	13,4 / 12,8	15	Feb 1500	14,60	166	0,82	9.895
Integração	2P	12,4	2	7,5	14,1	INT_2P_D.A._QUI_PREVISÃO	3,1	2,5	24,6 / 17,8	13,3 / 12,7	15	Jan 1700	13,40	166	0,88	10.577
total		1.119					299				3.302				85	

# Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

## OP\_A FIS LAB\_AF\_01

### 1. General Details:

Floor Area ..... 59,0 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

### 2. Internals:

#### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

#### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

#### 2.3. Electrical Equipment:

Wattage ..... 5,40 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	24,0	9	0	0

### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

### 4. Roofs, Skylights:

(No Roof or Skylight data).

### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

### 7. Partitions:

#### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 64,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

#### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 59,0 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 0P\_A\_FIS\_LAB\_AF\_02

#### 1. General Details:

Floor Area ..... **63,5** m<sup>2</sup>  
Avg. Ceiling Height ..... **3,0** m  
Building Weight ..... **300,0** kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... **User-Defined**  
OA Requirement 1 ..... **135,0** L/s  
OA Requirement 2 ..... **0,0** L/s  
Space Usage Defaults ..... **ASHRAE Std 62.1-2007**

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... **Recessed (Unvented)**  
Wattage ..... **16,00** W/m<sup>2</sup>  
Ballast Multiplier ..... **1,00**  
Schedule ..... **GERAL 100%**

##### 2.2. Task Lighting:

Wattage ..... **0,00** W/m<sup>2</sup>  
Schedule ..... **None**

##### 2.3. Electrical Equipment:

Wattage ..... **5,40** W/m<sup>2</sup>  
Schedule ..... **GERAL 100%**

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	21,0	6	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... **Parede rebocada - 15 cm**  
1st Window Type ..... **Alumínio c/vidro c/persiana**

#### 4. Roofs, Skylights:

**(No Roof or Skylight data).**

#### 5. Infiltration:

Design Cooling ..... **0,00** ACH  
Design Heating ..... **0,00** L/s  
Energy Analysis ..... **0,00** L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... **Floor Above Conditioned Space**  
**(No additional input required for this floor type).**

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... **Wall Partition**  
Area ..... **72,0** m<sup>2</sup>  
U-Value ..... **2,200** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... **32,0** °C  
Ambient at Space Max Temp ..... **24,0** °C  
Uncondit. Space Min Temp ..... **18,0** °C  
Ambient at Space Min Temp ..... **20,0** °C

##### 7.2. 2nd Partition Details:

Partition Type ..... **Ceiling Partition**  
Area ..... **63,5** m<sup>2</sup>  
U-Value ..... **1,500** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... **32,0** °C  
Ambient at Space Max Temp ..... **24,0** °C  
Uncondit. Space Min Temp ..... **18,0** °C  
Ambient at Space Min Temp ..... **20,0** °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 0P\_A\_FIS\_LAB\_INF\_01

#### 1. General Details:

Floor Area ..... 35,9 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 2635,0 Watts  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	15,0	4	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 49,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 35,9 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA LAB FIS QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 0P\_A FIS LAB INF\_02

#### 1. General Details:

Floor Area ..... 36,0 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 2635,0 Watts  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	15,0	5	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 49,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 36,0 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 0P\_A\_FIS\_PIBID

#### 1. General Details:

Floor Area ..... 28,4 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 97,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 1860,0 Watts  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	12,0	2	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 58,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 28,4 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 0P\_A\_FIS\_S\_EDIÇÃO\_VIDEO

#### 1. General Details:

Floor Area ..... 20,2 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 15,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 310,0 Watts  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	9,0	4	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 57,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 20,2 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C



## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 0P\_B\_QUI\_LAB\_ABS\_ATOMICA

#### 1. General Details:

Floor Area ..... 27,8 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 60,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 60,00 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	12,0	4	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 54,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 27,8 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 0P\_B\_QUI\_LAB\_CROMATO

#### 1. General Details:

Floor Area ..... 48,6 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 60,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 60,00 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	19,5	8	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 61,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 48,6 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 0P\_B\_QUI\_LAB\_INFRA\_VERM

#### 1. General Details:

Floor Area ..... 21,9 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 45,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 22,50 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	12,0	2	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 48,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 21,9 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 1P\_A FIS LAB\_AF\_03

#### 1. General Details:

Floor Area ..... 58,8 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 5,40 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	24,0	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 58,8 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 64,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 2.4. People:

Occupancy ..... 18,0 People  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 63,5 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 1P\_A FIS LAB\_AF\_04

#### 1. General Details:

Floor Area ..... **66,0** m<sup>2</sup>  
Avg. Ceiling Height ..... **3,0** m  
Building Weight ..... **300,0** kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... **User-Defined**  
OA Requirement 1 ..... **135,0** L/s  
OA Requirement 2 ..... **0,0** L/s  
Space Usage Defaults ..... **ASHRAE Std 62.1-2007**

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... **Recessed (Unvented)**  
Wattage ..... **16,00** W/m<sup>2</sup>  
Ballast Multiplier ..... **1,00**  
Schedule ..... **GERAL 100%**

##### 2.2. Task Lighting:

Wattage ..... **0,00** W/m<sup>2</sup>  
Schedule ..... **None**

##### 2.3. Electrical Equipment:

Wattage ..... **5,40** W/m<sup>2</sup>  
Schedule ..... **GERAL 100%**

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	25,5	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... **Parede rebocada - 15 cm**  
1st Window Type ..... **Alumínio c/vidro c/persiana**

#### 4. Roofs, Skylights:

**(No Roof or Skylight data).**

#### 5. Infiltration:

Design Cooling ..... **0,00** ACH  
Design Heating ..... **0,00** L/s  
Energy Analysis ..... **0,00** L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... **Floor Above Unconditioned Space**  
Floor Area ..... **66,0** m<sup>2</sup>  
Total Floor U-Value ..... **1,500** W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... **32,0** °C  
Ambient at Space Max Temp. .... **24,0** °C  
Unconditioned Space Min Temp. .... **27,0** °C  
Ambient at Space Min Temp. .... **18,0** °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... **Wall Partition**  
Area ..... **69,0** m<sup>2</sup>  
U-Value ..... **2,200** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... **32,0** °C  
Ambient at Space Max Temp ..... **24,0** °C  
Uncondit. Space Min Temp ..... **18,0** °C  
Ambient at Space Min Temp ..... **20,0** °C

##### 2.4. People:

Occupancy ..... **18,0** People  
Activity Level ..... **Office Work**  
Sensible ..... **71,8** W/person  
Latent ..... **60,1** W/person  
Schedule ..... **GERAL 100%**

##### 2.5. Miscellaneous Loads:

Sensible ..... **0** W  
Schedule ..... **GERAL 100%**  
Latent ..... **0** W  
Schedule ..... **None**

##### 7.2. 2nd Partition Details:

Partition Type ..... **Ceiling Partition**  
Area ..... **66,0** m<sup>2</sup>  
U-Value ..... **1,500** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... **32,0** °C  
Ambient at Space Max Temp ..... **24,0** °C  
Uncondit. Space Min Temp ..... **18,0** °C  
Ambient at Space Min Temp ..... **20,0** °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 1P\_A FIS LAB\_AF\_05

#### 1. General Details:

Floor Area ..... **66,3** m<sup>2</sup>  
Avg. Ceiling Height ..... **3,0** m  
Building Weight ..... **300,0** kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... **User-Defined**  
OA Requirement 1 ..... **135,0** L/s  
OA Requirement 2 ..... **0,0** L/s  
Space Usage Defaults ..... **ASHRAE Std 62.1-2007**

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... **Recessed (Unvented)**  
Wattage ..... **16,00** W/m<sup>2</sup>  
Ballast Multiplier ..... **1,00**  
Schedule ..... **GERAL 100%**

##### 2.2. Task Lighting:

Wattage ..... **0,00** W/m<sup>2</sup>  
Schedule ..... **None**

##### 2.3. Electrical Equipment:

Wattage ..... **5,40** W/m<sup>2</sup>  
Schedule ..... **GERAL 100%**

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	25,5	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... **Parede rebocada - 15 cm**  
1st Window Type ..... **Alumínio c/vidro c/persiana**

#### 4. Roofs, Skylights:

**(No Roof or Skylight data).**

#### 5. Infiltration:

Design Cooling ..... **0,00** ACH  
Design Heating ..... **0,00** L/s  
Energy Analysis ..... **0,00** L/s  
**Infiltration occurs at all hours.**

#### 6. Floors:

Type ..... **Floor Above Unconditioned Space**  
Floor Area ..... **66,3** m<sup>2</sup>  
Total Floor U-Value ..... **1,500** W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... **32,0** °C  
Ambient at Space Max Temp. .... **24,0** °C  
Unconditioned Space Min Temp. .... **27,0** °C  
Ambient at Space Min Temp. .... **18,0** °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... **Wall Partition**  
Area ..... **69,0** m<sup>2</sup>  
U-Value ..... **2,200** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... **32,0** °C  
Ambient at Space Max Temp ..... **24,0** °C  
Uncondit. Space Min Temp ..... **18,0** °C  
Ambient at Space Min Temp ..... **20,0** °C

##### 2.4. People:

Occupancy ..... **18,0** People  
Activity Level ..... **Office Work**  
Sensible ..... **71,8** W/person  
Latent ..... **60,1** W/person  
Schedule ..... **GERAL 100%**

##### 2.5. Miscellaneous Loads:

Sensible ..... **0** W  
Schedule ..... **GERAL 100%**  
Latent ..... **0** W  
Schedule ..... **None**

##### 7.2. 2nd Partition Details:

Partition Type ..... **Ceiling Partition**  
Area ..... **66,3** m<sup>2</sup>  
U-Value ..... **1,500** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... **32,0** °C  
Ambient at Space Max Temp ..... **24,0** °C  
Uncondit. Space Min Temp ..... **18,0** °C  
Ambient at Space Min Temp ..... **20,0** °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 1P\_A FIS LAB\_AF\_06

#### 1. General Details:

Floor Area ..... 55,4 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 5,40 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	22,5	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 55,4 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 63,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 2.4. People:

Occupancy ..... 18,0 People  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 55,4 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 1P\_B\_QUI\_S\_TEC\_AQ

#### 1. General Details:

Floor Area ..... 19,1 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 60,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 65,00 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	18,0	4	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 19,1 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 39,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 2.4. People:

Occupancy ..... 8,0 People  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 19,1 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C



## Space Input Data

UFBA LAB FIS QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 2P\_A FIS LAB AF 07

#### 1. General Details:

Floor Area ..... 58,5 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 5,40 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	22,8	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	58,5	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 58,5 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 66,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 2.4. People:

Occupancy ..... 18,0 People  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

UFBA LAB FIS QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### 2P\_A FIS LAB AF 08

#### 1. General Details:

Floor Area ..... **66,9** m<sup>2</sup>  
Avg. Ceiling Height ..... **3,0** m  
Building Weight ..... **300,0** kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... **User-Defined**  
OA Requirement 1 ..... **135,0** L/s  
OA Requirement 2 ..... **0,0** L/s  
Space Usage Defaults ..... **ASHRAE Std 62.1-2007**

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... **Recessed (Unvented)**  
Wattage ..... **16,00** W/m<sup>2</sup>  
Ballast Multiplier ..... **1,00**  
Schedule ..... **GERAL 100%**

##### 2.2. Task Lighting:

Wattage ..... **0,00** W/m<sup>2</sup>  
Schedule ..... **None**

##### 2.3. Electrical Equipment:

Wattage ..... **5,40** W/m<sup>2</sup>  
Schedule ..... **GERAL 100%**

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	25,5	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... **Parede rebocada - 15 cm**  
1st Window Type ..... **Alumínio c/vidro c/persiana**

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	66,9	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... **Laje com forro de gesso**

#### 5. Infiltration:

Design Cooling ..... **0,00** ACH  
Design Heating ..... **0,00** L/s  
Energy Analysis ..... **0,00** L/s  
**Infiltration occurs at all hours.**

#### 6. Floors:

Type ..... **Floor Above Unconditioned Space**  
Floor Area ..... **66,9** m<sup>2</sup>  
Total Floor U-Value ..... **1,500** W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... **32,0** °C  
Ambient at Space Max Temp. .... **24,0** °C  
Unconditioned Space Min Temp. .... **27,0** °C  
Ambient at Space Min Temp. .... **18,0** °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... **Wall Partition**  
Area ..... **73,5** m<sup>2</sup>  
U-Value ..... **2,200** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... **32,0** °C  
Ambient at Space Max Temp. .... **24,0** °C  
Uncondit. Space Min Temp. .... **18,0** °C  
Ambient at Space Min Temp. .... **20,0** °C

##### 7.2. 2nd Partition Details:

**(No partition data).**

## Space Input Data

UFBA LAB FIS QUI  
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### 2P\_A FIS LAB AF 09

#### 1. General Details:

Floor Area ..... 67,1 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 5,40 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	25,5	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	67,1	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 67,1 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 69,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 2.4. People:

Occupancy ..... 18,0 People  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

UFBA LAB FIS QUI  
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### 2P\_A FIS LAB AF 10

#### 1. General Details:

Floor Area ..... 55,5 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 5,40 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	21,6	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	55,5	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 55,5 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 64,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

UFBA LAB FIS QUI  
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### 2P\_B QUI LAB BALANÇAS

#### 1. General Details:

Floor Area ..... 37,6 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 22,50 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	15,0	4	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	37,6	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 37,6 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 57,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 2.4. People:

Occupancy ..... 18,0 People  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

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### 2P\_B QUI LAB MET OTICOS

#### 1. General Details:

Floor Area ..... 58,4 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 135,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 22,50 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	24,0	9	0	0

#### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	58,4	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 58,4 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 64,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 2.4. People:

Occupancy ..... 18,0 People  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

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### INT\_0P\_NUTRICIONISTA

#### 1. General Details:

Floor Area ..... 3,6 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 7,5 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 155,0 Watts  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

(No Wall, Window, Door data).

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Conditioned Space  
(No additional input required for this floor type).

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 21,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 2.4. People:

Occupancy ..... 1,0 Person  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 3,6 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

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### INT\_0P\_REC\_GENEROS

#### 1. General Details:

Floor Area ..... **4,7** m<sup>2</sup>  
Avg. Ceiling Height ..... **3,0** m  
Building Weight ..... **300,0** kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... **User-Defined**  
OA Requirement 1 ..... **7,5** L/s  
OA Requirement 2 ..... **0,0** L/s  
Space Usage Defaults ..... **ASHRAE Std 62.1-2007**

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... **Recessed (Unvented)**  
Wattage ..... **16,00** W/m<sup>2</sup>  
Ballast Multiplier ..... **1,00**  
Schedule ..... **GERAL 100%**

##### 2.2. Task Lighting:

Wattage ..... **0,00** W/m<sup>2</sup>  
Schedule ..... **None**

##### 2.3. Electrical Equipment:

Wattage ..... **155,0** Watts  
Schedule ..... **GERAL 100%**

#### 3. Walls, Windows, Doors:

**(No Wall, Window, Door data).**

#### 4. Roofs, Skylights:

**(No Roof or Skylight data).**

#### 5. Infiltration:

Design Cooling ..... **0,00** ACH  
Design Heating ..... **0,00** L/s  
Energy Analysis ..... **0,00** L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... **Floor Above Conditioned Space**  
**(No additional input required for this floor type).**

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... **Wall Partition**  
Area ..... **26,2** m<sup>2</sup>  
U-Value ..... **2,200** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... **32,0** °C  
Ambient at Space Max Temp ..... **24,0** °C  
Uncondit. Space Min Temp ..... **18,0** °C  
Ambient at Space Min Temp ..... **20,0** °C

##### 2.4. People:

Occupancy ..... **1,0** Person  
Activity Level ..... **Office Work**  
Sensible ..... **71,8** W/person  
Latent ..... **60,1** W/person  
Schedule ..... **GERAL 100%**

##### 2.5. Miscellaneous Loads:

Sensible ..... **0** W  
Schedule ..... **GERAL 100%**  
Latent ..... **0** W  
Schedule ..... **None**

##### 7.2. 2nd Partition Details:

Partition Type ..... **Ceiling Partition**  
Area ..... **4,7** m<sup>2</sup>  
U-Value ..... **1,500** W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... **32,0** °C  
Ambient at Space Max Temp ..... **24,0** °C  
Uncondit. Space Min Temp ..... **18,0** °C  
Ambient at Space Min Temp ..... **20,0** °C



## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

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### INT\_1P\_AUDITORIO

#### 1. General Details:

Floor Area ..... 117,4 m<sup>2</sup>  
Avg. Ceiling Height ..... 6,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 1000,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 5,40 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
W	54,0	9	0	0
E	54,0	9	0	0

#### 3.1. Construction Types for Exposure W

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 3.2. Construction Types for Exposure E

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

(No Roof or Skylight data).

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 117,4 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 84,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

##### 2.4. People:

Occupancy ..... 133,0 People  
Activity Level ..... Seated at Rest  
Sensible ..... 67,4 W/person  
Latent ..... 35,2 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

Partition Type ..... Ceiling Partition  
Area ..... 117,4 m<sup>2</sup>  
U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp ..... 32,0 °C  
Ambient at Space Max Temp ..... 24,0 °C  
Uncondit. Space Min Temp ..... 18,0 °C  
Ambient at Space Min Temp ..... 20,0 °C

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### INT\_1P\_SALA\_TECNICA

#### 1. General Details:

Floor Area ..... 3,0 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 0,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 60,00 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

(No Wall, Window, Door data).

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	3,0	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s

Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 3,0 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 22,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 2.4. People:

Occupancy ..... 0,0 Person  
Activity Level ..... Seated at Rest  
Sensible ..... 67,4 W/person  
Latent ..... 35,2 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### INT\_2P\_COPIADORA

#### 1. General Details:

Floor Area ..... 16,0 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 30,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 60,00 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

(No Wall, Window, Door data).

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	16,0	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s

Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 16,0 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 54,0 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 2.4. People:

Occupancy ..... 4,0 People  
Activity Level ..... Office Work  
Sensible ..... 71,8 W/person  
Latent ..... 60,1 W/person  
Schedule ..... GERAL 100%

##### 2.5. Miscellaneous Loads:

Sensible ..... 0 W  
Schedule ..... GERAL 100%  
Latent ..... 0 W  
Schedule ..... None

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

UFBA LAB FIS QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### INT\_2P\_D.A.FIS\_PREVISÃO

#### 1. General Details:

Floor Area ..... 11,4 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 15,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 22,50 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
N	18,0	2	0	0
E	9,0	2	0	0

##### 3.1. Construction Types for Exposure N

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

##### 3.2. Construction Types for Exposure E

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	11,4	0	0

##### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 11,4 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 13,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

## Space Input Data

UFBA LAB FIS QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

### INT\_2P\_D.A.QUI\_PREVISÃO

#### 1. General Details:

Floor Area ..... 12,4 m<sup>2</sup>  
Avg. Ceiling Height ..... 3,0 m  
Building Weight ..... 300,0 kg/m<sup>2</sup>

#### 1.1. OA Ventilation Requirements:

Space Usage ..... User-Defined  
OA Requirement 1 ..... 15,0 L/s  
OA Requirement 2 ..... 0,0 L/s  
Space Usage Defaults ..... ASHRAE Std 62.1-2007

#### 2. Internals:

##### 2.1. Overhead Lighting:

Fixture Type ..... Recessed (Unvented)  
Wattage ..... 16,00 W/m<sup>2</sup>  
Ballast Multiplier ..... 1,00  
Schedule ..... GERAL 100%

##### 2.2. Task Lighting:

Wattage ..... 0,00 W/m<sup>2</sup>  
Schedule ..... None

##### 2.3. Electrical Equipment:

Wattage ..... 22,50 W/m<sup>2</sup>  
Schedule ..... GERAL 100%

#### 3. Walls, Windows, Doors:

Exp.	Wall Gross Area (m <sup>2</sup> )	Window 1 Qty.	Window 2 Qty.	Door 1 Qty.
S	18,0	2	0	0
E	9,0	2	0	0

#### 3.1. Construction Types for Exposure S

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 3.2. Construction Types for Exposure E

Wall Type ..... Parede rebocada - 15 cm  
1st Window Type ..... Alumínio c/vidro c/persiana

#### 4. Roofs, Skylights:

Exp.	Roof Gross Area (m <sup>2</sup> )	Roof Slope (deg.)	Skylight Qty.
H	12,4	0	0

#### 4.1. Construction Types for Exposure H

Roof Type ..... Laje com forro de gesso

#### 5. Infiltration:

Design Cooling ..... 0,00 ACH  
Design Heating ..... 0,00 L/s  
Energy Analysis ..... 0,00 L/s  
Infiltration occurs at all hours.

#### 6. Floors:

Type ..... Floor Above Unconditioned Space  
Floor Area ..... 12,4 m<sup>2</sup>  
Total Floor U-Value ..... 1,500 W/(m<sup>2</sup>·K)  
Unconditioned Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Unconditioned Space Min Temp. .... 27,0 °C  
Ambient at Space Min Temp. .... 18,0 °C

#### 7. Partitions:

##### 7.1. 1st Partition Details:

Partition Type ..... Wall Partition  
Area ..... 13,5 m<sup>2</sup>  
U-Value ..... 2,200 W/(m<sup>2</sup>·K)  
Uncondit. Space Max Temp. .... 32,0 °C  
Ambient at Space Max Temp. .... 24,0 °C  
Uncondit. Space Min Temp. .... 18,0 °C  
Ambient at Space Min Temp. .... 20,0 °C

##### 7.2. 2nd Partition Details:

(No partition data).

## Space Input Data

UFBA\_LAB\_FIS\_QUI  
MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
06:59

## 0P\_A\_FIS\_LAB\_AF\_01 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 0P\_A\_FIS\_LAB\_AF\_01  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 0P_A_FIS_LAB_AF_01	
0P_A_FIS_LAB_AF_01	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	485,2	-	-	135,0

### 5. Equipment Data



## 0P\_A\_FIS\_LAB\_AF\_01 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	11,8	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 0P\_A\_FIS\_LAB\_AF\_02 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 0P\_A\_FIS\_LAB\_AF\_02  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 0P_A_FIS_LAB_AF_02	
0P_A_FIS_LAB_AF_02	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

##### Cooling Coil:

Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

##### Sizing Data:

Cooling Supply Temperature ..... 12,0 °C

##### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

##### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	466,5	-	-	135,0

### 5. Equipment Data

## 0P\_A\_FIS\_LAB\_AF\_02 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	11,7	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 0P\_A\_FIS\_LAB\_INF\_01 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 0P\_A\_FIS\_LAB\_INF\_01  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 0P_A_FIS_LAB_INF_01	
0P_A_FIS_LAB_INF_01	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	514,3	-	-	135,0

### 5. Equipment Data

## 0P\_A\_FIS\_LAB\_INF\_01 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	12,8	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 0P\_A\_FIS\_LAB\_INF\_02 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 0P\_A\_FIS\_LAB\_INF\_02  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 0P_A_FIS_LAB_INF_02	
0P_A_FIS_LAB_INF_02	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... THERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	526,5	-	-	135,0

### 5. Equipment Data

## 0P\_A\_FIS\_LAB\_INF\_02 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	12,9	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 0P\_A\_FIS\_PIBID Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 0P\_A\_FIS\_PIBID  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 0P_A_FIS_PIBID	
0P_A_FIS_PIBID	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	394,6	-	-	97,0

### 5. Equipment Data



## 0P\_A\_FIS\_PIBID Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
 Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
 07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	9,5	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 0P\_A\_FIS\_S\_EDIÇÃO\_VIDEO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 0P\_A\_FIS\_S\_EDIÇÃO\_VIDEO  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 0P_A_FIS_S_EDIÇÃO_VIDEO	
0P_A_FIS_S_EDIÇÃO_VIDEO	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

##### Cooling Coil:

Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

##### Sizing Data:

Cooling Supply Temperature ..... 12,0 °C

##### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

##### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	220,2	-	-	15,0

### 5. Equipment Data

## 0P\_A\_FIS\_S\_EDIÇÃO\_VIDEO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	3,5	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 0P\_B\_QUI\_LAB\_ABS\_ATOMICA Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 0P\_B\_QUI\_LAB\_ABS\_ATOMICA  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

<b>Zone 1: 0P_B_QUI_LAB_ABS_ATOMICA</b>	
0P_B_QUI_LAB_ABS_ATOMICA	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... THERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	371,6	-	-	60,0

### 5. Equipment Data

## 0P\_B\_QUI\_LAB\_ABS\_ATOMICA Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	7,5	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 0P\_B\_QUI\_LAB\_CROMATOGRAF Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... **0P\_B\_QUI\_LAB\_CROMATOGRAF**  
Equipment Type ..... **Terminal Units**  
Air System Type ..... **Split DX Fan Coil**  
Number of zones ..... **1**  
Ventilation ..... **Direct Ventilation**

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

<b>Zone 1: 0P_B_QUI_LAB_CROMATOGRAF</b>	
0P_B_QUI_LAB_CROMATO	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... **TERMOSTATO**  
Unoccupied Cooling is ..... **Available**

#### Common Terminal Unit Data:

##### Cooling Coil:

Design Supply Temp. .... **12,0 °C**  
Coil Bypass Factor ..... **0,100**  
Cooling Source ..... **Air-Cooled DX**  
Schedule ..... **JFMAMJJASOND**

Fan Control ..... **Fan On**  
Ventilation Sizing Method ..... **Sum of Space OA Airflows**

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

##### Sizing Data:

Cooling Supply Temperature ..... **12,0 °C**

##### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... **5,6 K**  
Hot Water Delta-T ..... **11,1 K**

##### Safety Factors:

Cooling Sensible ..... **0 %**  
Cooling Latent ..... **0 %**  
Heating ..... **0 %**

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... **Sum of space airflow rates**  
Space Airflow Sizing Method ..... **Individual peak space loads**

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	581,4	-	-	60,0

### 5. Equipment Data

## 0P\_B\_QUI\_LAB\_CROMATOGRAF Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	10,1	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 0P\_B\_QUI\_LAB\_INFRA\_VERMELHO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 0P\_B\_QUI\_LAB\_INFRA\_VERMELHO  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 0P_B_QUI_LAB_INFRA_VERME	
0P_B_QUI_LAB_INFRA_VERM	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	229,1	-	-	45,0

### 5. Equipment Data



## 0P\_B\_QUI\_LAB\_INFRA\_VERMELHO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	4,9	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

# 1P\_A\_FIS\_LAB\_AF\_03 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

## 1. General Details:

Air System Name ..... 1P\_A\_FIS\_LAB\_AF\_03  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

## 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

## 3. Zone Components:

### Space Assignments:

Zone 1: 1P_A_FIS_LAB_AF_03	
1P_A_FIS_LAB_AF_03	x1

### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

## 4. Sizing Data (Computer-Generated):

### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	548,0	-	-	135,0

## 5. Equipment Data

## 1P\_A\_FIS\_LAB\_AF\_03 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	12,6	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

# 1P\_A\_FIS\_LAB\_AF\_04 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

## 1. General Details:

Air System Name ..... 1P\_A\_FIS\_LAB\_AF\_04  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

## 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

## 3. Zone Components:

### Space Assignments:

Zone 1: 1P_A_FIS_LAB_AF_04	
1P_A_FIS_LAB_AF_04	x1

### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

## 4. Sizing Data (Computer-Generated):

### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

**Hydronic Sizing Specifications:**  
Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

**Safety Factors:**  
Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	577,7	-	-	135,0

## 5. Equipment Data

## 1P\_A\_FIS\_LAB\_AF\_04 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	13,0	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

# 1P\_A\_FIS\_LAB\_AF\_05 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

## 1. General Details:

Air System Name ..... 1P\_A\_FIS\_LAB\_AF\_05  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

## 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

## 3. Zone Components:

### Space Assignments:

Zone 1: 1P_A_FIS_LAB_AF_05	
1P_A_FIS_LAB_AF_05	x1

### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

## 4. Sizing Data (Computer-Generated):

### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

**Hydronic Sizing Specifications:**  
Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

**Safety Factors:**  
Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	578,7	-	-	135,0

## 5. Equipment Data

## 1P\_A\_FIS\_LAB\_AF\_05 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	13,1	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

# 1P\_A\_FIS\_LAB\_AF\_06 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

## 1. General Details:

Air System Name ..... 1P\_A\_FIS\_LAB\_AF\_06  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

## 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

## 3. Zone Components:

### Space Assignments:

Zone 1: 1P_A_FIS_LAB_AF_06	
1P_A_FIS_LAB_AF_06	x1

### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

## 4. Sizing Data (Computer-Generated):

### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

**Hydronic Sizing Specifications:**  
Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

**Safety Factors:**  
Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	527,2	-	-	135,0

## 5. Equipment Data



## 1P\_A\_FIS\_LAB\_AF\_06 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	12,3	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

# 1P\_B\_QUI-S\_TEC\_AQ Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

## 1. General Details:

Air System Name ..... 1P\_B\_QUI-S\_TEC\_AQ  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

## 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

## 3. Zone Components:

### Space Assignments:

Zone 1: 1P_B_QUI-S_TEC_AQ	
1P_B_QUI_S_TEC_AQ	x1

### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

## 4. Sizing Data (Computer-Generated):

### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

**Hydronic Sizing Specifications:**  
Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

**Safety Factors:**  
Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	327,6	-	-	60,0

## 5. Equipment Data

## 1P\_B\_QUI-S\_TEC\_AQ Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	6,8	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 2P\_A\_FIS\_LAB\_AF\_07 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 2P\_A\_FIS\_LAB\_AF\_07  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 2P_A_FIS_LAB_AF_07	
2P_A_FIS_LAB_AF_07	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	544,5	-	-	135,0

### 5. Equipment Data

## 2P\_A\_FIS\_LAB\_AF\_07 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	13,1	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 2P\_A\_FIS\_LAB\_AF\_08 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 2P\_A\_FIS\_LAB\_AF\_08  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 2P_A_FIS_LAB_AF_08	
2P_A_FIS_LAB_AF_08	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	591,5	-	-	135,0

### 5. Equipment Data

## 2P\_A\_FIS\_LAB\_AF\_08 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	13,7	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 2P\_A\_FIS\_LAB\_AF\_09 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 2P\_A\_FIS\_LAB\_AF\_09  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 2P_A_FIS_LAB_AF_09	
2P_A_FIS_LAB_AF_09	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	585,5	-	-	135,0

### 5. Equipment Data



## 2P\_A\_FIS\_LAB\_AF\_09 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	13,7	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 2P\_A\_FIS\_LAB\_AF\_10 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 2P\_A\_FIS\_LAB\_AF\_10  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 2P_A_FIS_LAB_AF_10	
2P_A_FIS_LAB_AF_10	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	529,2	-	-	135,0

### 5. Equipment Data

## 2P\_A\_FIS\_LAB\_AF\_10 Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	12,8	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 2P\_B\_QUI\_LAB\_BALANÇAS Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 2P\_B\_QUI\_LAB\_BALANÇAS  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 2P_B_QUI_LAB_BALANÇAS	
2P_B_QUI_LAB_BALANÇAS	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	436,9	-	-	135,0

### 5. Equipment Data

## 2P\_B\_QUI\_LAB\_BALANÇAS Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	11,8	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## 2P\_B\_QUI\_LAB\_MET\_OTICOS Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... 2P\_B\_QUI\_LAB\_MET\_OTICOS  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: 2P_B_QUI_LAB_MET_OTICOS	
2P_B_QUI_LAB_MET_OTICOS	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	619,1	-	-	135,0

### 5. Equipment Data

## 2P\_B\_QUI\_LAB\_MET\_OTICOS Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	14,3	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## INT\_0P\_AUDITORIO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... INT\_0P\_AUDITORIO  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: INT_1P_AUDITORIO	
INT_1P_AUDITORIO	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	1660,9	-	-	1000,0

### 5. Equipment Data



## INT\_0P\_AUDITORIO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	63,5	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## INT\_0P\_NUTRICIONISTA Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... INT\_0P\_NUTRICIONISTA  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

<b>Zone 1: INT_0P_NUTRICIONISTA</b>	
INT_0P_NUTRICIONISTA	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	57,2	-	-	7,5

### 5. Equipment Data

## INT\_0P\_NUTRICIONISTA Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	1,1	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## INT\_0P\_REC\_GENEROS Input Data

Project Name: UFBA LAB FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... INT\_0P\_REC\_GENEROS  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: INT_0P_REC_GENEROS	
INT_0P_REC_GENEROS	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	66,7	-	-	7,5

### 5. Equipment Data

## INT\_0P\_REC\_GENEROS Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	1,2	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## INT\_1P\_SALA\_TECNICA Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... INT\_1P\_SALA\_TECNICA  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: INT_1P_SALA_TECNICA	
INT_1P_SALA_TECNICA	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	22,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	69,2	-	-	0,0

### 5. Equipment Data

## INT\_1P\_SALA\_TECNICA Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	0,8	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## INT\_2P\_COPIADORA Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... INT\_2P\_COPIADORA  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: INT_2P_COPIADORA	
INT_2P_COPIADORA	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	236,1	-	-	30,0

### 5. Equipment Data



## INT\_2P\_COPIADORA Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	4,5	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## INT\_2P\_D.A.\_FIS\_PREVISÃO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... INT\_2P\_D.A.\_FIS\_PREVISÃO  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: INT_2P_D.A._FIS_PREVISÃO	
INT_2P_D.A.FIS_PREVISÃO	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	166,4	-	-	15,0

### 5. Equipment Data

## INT\_2P\_D.A.\_FIS\_PREVISÃO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	2,9	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## INT\_2P\_D.A.\_QUI\_PREVISÃO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### 1. General Details:

Air System Name ..... INT\_2P\_D.A.\_QUI\_PREVISÃO  
Equipment Type ..... Terminal Units  
Air System Type ..... Split DX Fan Coil  
Number of zones ..... 1  
Ventilation ..... Direct Ventilation

### 2. Dedicated Outdoor Air System Components:

(Dedicated Outdoor Air System not used: no inputs)

### 3. Zone Components:

#### Space Assignments:

Zone 1: INT_2P_D.A._QUI_PREVISÃO	
INT_2P_D.A.QUI_PREVISÃO	x1

#### Thermostats and Zone Data:

Zone	Cooling T-Stat Occ. (°C)	Cooling T-Stat Unocc. (°C)	Heating T-Stat Occ. (°C)	Heating T-Stat Unocc. (°C)	T-Stat Throttling Range (°C)
1	23,0	32,0	21,1	18,3	1,00

Thermostat Schedule ..... TERMOSTATO  
Unoccupied Cooling is ..... Available

#### Common Terminal Unit Data:

**Cooling Coil:**  
Design Supply Temp. .... 12,0 °C  
Coil Bypass Factor ..... 0,100  
Cooling Source ..... Air-Cooled DX  
Schedule ..... JFMAMJJASOND

Fan Control ..... Fan On  
Ventilation Sizing Method ..... Sum of Space OA Airflows

#### Terminal Units Data:

Zone	Terminal Type	Air Distribution	Air Distribution Effectiveness Specification	Air Distribution Effectiveness	Minimum Airflow	Fan Performance	Fan Efficiency	Design Supply Temp.
1	Fan coil	Ceiling supply / ceiling return	Not Used	-	0,00 L/s/person	150 Pa	50 %	-

### 4. Sizing Data (Computer-Generated):

#### System Sizing Data:

**Sizing Data:**  
Cooling Supply Temperature ..... 12,0 °C

#### Hydronic Sizing Specifications:

Chilled Water Delta-T ..... 5,6 K  
Hot Water Delta-T ..... 11,1 K

#### Safety Factors:

Cooling Sensible ..... 0 %  
Cooling Latent ..... 0 %  
Heating ..... 0 %

#### Zone Sizing Data:

Zone Airflow Sizing Method ..... Sum of space airflow rates  
Space Airflow Sizing Method ..... Individual peak space loads

Zone	Supply Airflow (L/s)	Zone Htg Unit (kW)	Reheat Coil (kW)	Ventilation (L/s)
1	186,6	-	-	15,0

### 5. Equipment Data

## INT\_2P\_D.A.\_QUI\_PREVISÃO Input Data

Project Name: UFBA\_LAB\_FIS\_QUI

10/17/2021

Prepared by: MSA Ar Condicionado e Refrigeração Ltda

07:00

### Terminal Cooling Units - Air-Cooled DX

Zone	Estimated Maximum Load (kW)	Design OAT (°C)	Equipment Sizing	Gross Cooling Capacity (kW)	Capacity Oversizing Factor (%)	Compressor + OD Fan Power (kW)	ARI Performance Rating	Units	Conventional Cutoff OAT (°C)
1	3,1	35,0	Auto-Sized	-	0	-	3,224	EER	-17,8

## Zone Sizing Summary for 0P\_A\_FIS\_LAB\_AF\_01

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 0P\_A\_FIS\_LAB\_AF\_01  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 59,0 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
0P_A_FIS_LAB_AF_01	11,8	7,3	25,7 / 19,9	13,3 / 12,8	-	Apr 1500	8,22

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_A_FIS_LAB_AF_01	0,0	-18,3 / -18,3	0,00	485	0,183	0,146	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
0P_A_FIS_LAB_AF_01	6,4	May 1500	0,8	59,0

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
0P_A_FIS_LAB_AF_01	1	6,4	May 1500	485	0,8	59,0	8,22

## Zone Sizing Summary for 0P\_A\_FIS\_LAB\_AF\_02

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 0P\_A\_FIS\_LAB\_AF\_02  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 63,5 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
0P_A_FIS_LAB_AF_02	11,7	7,0	26,3 / 20,6	13,9 / 13,4	-	Feb 1400	7,35

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_A_FIS_LAB_AF_02	0,0	-18,3 / -18,3	0,00	466	0,176	0,140	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
0P_A_FIS_LAB_AF_02	6,2	Apr 1500	0,9	63,5

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
0P_A_FIS_LAB_AF_02							
0P_A_FIS_LAB_AF_02	1	6,2	Apr 1500	466	0,9	63,5	7,35

## Zone Sizing Summary for 0P\_A\_FIS\_LAB\_INF\_01

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 0P\_A\_FIS\_LAB\_INF\_01  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 35,9 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
0P_A_FIS_LAB_INF_01	12,8	7,9	25,9 / 20,0	13,3 / 12,8	-	Jan 1700	14,32

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_A_FIS_LAB_INF_01	0,0	-18,3 / -18,3	0,00	514	0,194	0,154	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
0P_A_FIS_LAB_INF_01	6,8	Apr 1500	0,6	35,9

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
0P_A_FIS_LAB_INF_01							
0P_A_FIS_LAB_INF_01	1	6,8	Apr 1500	514	0,6	35,9	14,32



## Zone Sizing Summary for 0P\_A\_FIS\_LAB\_INF\_02

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 0P\_A\_FIS\_LAB\_INF\_02  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 36,0 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
0P_A_FIS_LAB_INF_02	12,9	8,0	26,1 / 20,1	13,5 / 13,0	-	Jan 1400	14,62

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_A_FIS_LAB_INF_02	0,0	-18,3 / -18,3	0,00	526	0,199	0,158	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
0P_A_FIS_LAB_INF_02	7,0	May 1500	0,6	36,0

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
0P_A_FIS_LAB_INF_02							
0P_A_FIS_LAB_INF_02	1	7,0	May 1500	526	0,6	36,0	14,62

## Zone Sizing Summary for 0P\_A\_FIS\_PIBID

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... **0P\_A\_FIS\_PIBID**  
Equipment Class ..... **TERM**  
Air System Type ..... **SPLT-FC**

Number of zones ..... **1**  
Floor Area ..... **28,4** m<sup>2</sup>  
Location ..... **Salvador, Brazil**

### Sizing Calculation Information

Calculation Months ..... **Jan to Dec**  
Sizing Data ..... **Calculated**

Zone L/s Sizing ..... **Sum of space airflow rates**  
Space L/s Sizing ..... **Individual peak space loads**

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
0P_A_FIS_PIBID	9,5	6,0	26,0 / 19,9	13,3 / 12,8	-	Feb 1500	13,90

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_A_FIS_PIBID	0,0	-18,3 / -18,3	0,00	395	0,149	0,118	97

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
0P_A_FIS_PIBID	5,2	Apr 1500	0,6	28,4

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
<b>0P_A_FIS_PIBID</b>							
0P_A_FIS_PIBID	1	5,2	Apr 1500	395	0,6	28,4	13,90

## Zone Sizing Summary for 0P\_A\_FIS\_S\_EDIÇÃO\_VIDEO

Project Name: UFBA LAB FIS QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name .... 0P\_A\_FIS\_S\_EDIÇÃO\_VIDEO  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 20,2 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
0P_A_FIS_S_EDIÇÃO_VIDEO	3,5	2,9	24,4 / 17,5	13,3 / 12,7	-	Apr 1300	10,90

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_A_FIS_S_EDIÇÃO_VIDEO	0,0	-18,3 / -18,3	0,00	220	0,083	0,066	15

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
0P_A_FIS_S_EDIÇÃO_VIDEO	2,9	Apr 1400	0,5	20,2

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
0P_A_FIS_S_EDIÇÃO_VIDEO							
0P_A_FIS_S_EDIÇÃO_VIDEO	1	2,9	Apr 1400	220	0,5	20,2	10,90

## Zone Sizing Summary for 0P\_B\_QUI\_LAB\_ABS\_ATOMICA

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name **0P\_B\_QUI\_LAB\_ABS\_ATOMICA**  
Equipment Class **TERM**  
Air System Type **SPLT-FC**

Number of zones ..... **1**  
Floor Area ..... **27,8** m<sup>2</sup>  
Location ..... **Salvador, Brazil**

### Sizing Calculation Information

Calculation Months ..... **Jan to Dec**  
Sizing Data ..... **Calculated**

Zone L/s Sizing ..... **Sum of space airflow rates**  
Space L/s Sizing ..... **Individual peak space loads**

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
0P_B_QUI_LAB_ABS_ATOMICA	7,5	5,3	25,3 / 19,0	13,5 / 13,0	-	Jan 1500	13,37

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_B_QUI_LAB_ABS_ATOMICA	0,0	-18,3 / -18,3	0,00	372	0,141	0,111	60

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
0P_B_QUI_LAB_ABS_ATOMICA	4,9	Apr 1400	0,5	27,8

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
<b>0P_B_QUI_LAB_ABS_ATOMICA</b>							
0P_B_QUI_LAB_ABS_ATOMICA	1	4,9	Apr 1400	372	0,5	27,8	13,37

## Zone Sizing Summary for 0P\_B\_QUI\_LAB\_CROMATOGRAP

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name **0P\_B\_QUI\_LAB\_CROMATOGRAP**  
Equipment Class ..... **TERM**  
Air System Type ..... **SPLT-FC**

Number of zones ..... **1**  
Floor Area ..... **48,6** m<sup>2</sup>  
Location ..... **Salvador, Brazil**

### Sizing Calculation Information

Calculation Months ..... **Jan to Dec**  
Sizing Data ..... **Calculated**

Zone L/s Sizing ..... **Sum of space airflow rates**  
Space L/s Sizing ..... **Individual peak space loads**

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
0P_B_QUI_LAB_CROMATOGRAP	10,1	8,0	24,6 / 17,9	13,2 / 12,6	-	Apr 1400	11,96

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_B_QUI_LAB_CROMATOGRAP	0,0	-18,3 / -18,3	0,00	581	0,220	0,174	60

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
0P_B_QUI_LAB_CROMATOGRAP	7,7	May 1400	0,7	48,6

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
<b>0P_B_QUI_LAB_CROMATOGRAP</b>							
0P_B_QUI_LAB_CROMATO	1	7,7	May 1400	581	0,7	48,6	11,96

## Zone Sizing Summary for 0P\_B\_QUI\_LAB\_INFRA\_VERMELHO

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name **0P\_B\_QUI\_LAB\_INFRA\_VERMELHO**  
Equipment Class ..... **TERM**  
Air System Type ..... **SPLT-FC**

Number of zones ..... **1**  
Floor Area ..... **21,9** m<sup>2</sup>  
Location ..... **Salvador, Brazil**

### Sizing Calculation Information

Calculation Months ..... **Jan to Dec**  
Sizing Data ..... **Calculated**

Zone L/s Sizing ..... **Sum of space airflow rates**  
Space L/s Sizing ..... **Individual peak space loads**

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
0P_B_QUI_LAB_INFRA_VERME	4,9	3,2	25,5 / 19,5	13,7 / 13,2	-	Dec 1600	10,46

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
0P_B_QUI_LAB_INFRA_VERME	0,0	-18,3 / -18,3	0,00	229	0,087	0,069	45

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
0P_B_QUI_LAB_INFRA_VERME	3,0	Apr 1500	0,5	21,9

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
<b>0P_B_QUI_LAB_INFRA_VERME</b>							
0P_B_QUI_LAB_INFRA_VERM	1	3,0	Apr 1500	229	0,5	21,9	10,46

## Zone Sizing Summary for 1P\_A\_FIS\_LAB\_AF\_03

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 1P\_A\_FIS\_LAB\_AF\_03  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 58,8 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
1P_A_FIS_LAB_AF_03	12,6	7,8	25,8 / 20,2	14,1 / 13,6	-	Dec 1500	9,32

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
1P_A_FIS_LAB_AF_03	0,0	-18,3 / -18,3	0,00	548	0,207	0,164	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
1P_A_FIS_LAB_AF_03	7,3	May 1500	0,8	58,8

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
1P_A_FIS_LAB_AF_03							
1P_A_FIS_LAB_AF_03	1	7,3	May 1500	548	0,8	58,8	9,32

## Zone Sizing Summary for 1P\_A\_FIS\_LAB\_AF\_04

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 1P\_A\_FIS\_LAB\_AF\_04  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 66,0 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
1P_A_FIS_LAB_AF_04	13,0	8,2	25,9 / 20,0	14,1 / 13,6	-	Jan 1500	8,75

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
1P_A_FIS_LAB_AF_04	0,0	-18,3 / -18,3	0,00	578	0,218	0,173	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
1P_A_FIS_LAB_AF_04	7,7	May 1500	0,9	66,0

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
1P_A_FIS_LAB_AF_04							
1P_A_FIS_LAB_AF_04	1	7,7	May 1500	578	0,9	66,0	8,75



## Zone Sizing Summary for 1P\_A\_FIS\_LAB\_AF\_05

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 1P\_A\_FIS\_LAB\_AF\_05  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 66,3 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
1P_A_FIS_LAB_AF_05	13,1	8,2	25,7 / 20,0	13,9 / 13,4	-	Dec 1500	8,73

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
1P_A_FIS_LAB_AF_05	0,0	-18,3 / -18,3	0,00	579	0,219	0,174	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
1P_A_FIS_LAB_AF_05	7,7	May 1500	0,9	66,3

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
1P_A_FIS_LAB_AF_05							
1P_A_FIS_LAB_AF_05	1	7,7	May 1500	579	0,9	66,3	8,73

## Zone Sizing Summary for 1P\_A\_FIS\_LAB\_AF\_06

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 1P\_A\_FIS\_LAB\_AF\_06  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 55,4 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
1P_A_FIS_LAB_AF_06	12,3	7,6	26,0 / 20,3	14,1 / 13,6	-	Jan 1600	9,52

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
1P_A_FIS_LAB_AF_06	0,0	-18,3 / -18,3	0,00	527	0,199	0,158	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
1P_A_FIS_LAB_AF_06	7,0	May 1400	0,8	55,4

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
1P_A_FIS_LAB_AF_06							
1P_A_FIS_LAB_AF_06	1	7,0	May 1400	527	0,8	55,4	9,52

## Zone Sizing Summary for 1P\_B\_QUI-S\_TEC\_AQ

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 1P\_B\_QUI-S\_TEC\_AQ  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 19,1 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
1P_B_QUI-S_TEC_AQ	6,8	4,7	25,1 / 18,8	13,1 / 12,5	-	Apr 1500	17,15

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
1P_B_QUI-S_TEC_AQ	0,0	-18,3 / -18,3	0,00	328	0,124	0,098	60

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
1P_B_QUI-S_TEC_AQ	4,3	May 1500	0,4	19,1

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
1P_B_QUI-S_TEC_AQ							
1P_B_QUI_S_TEC_AQ	1	4,3	May 1500	328	0,4	19,1	17,15

## Zone Sizing Summary for 2P\_A\_FIS\_LAB\_AF\_07

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 2P\_A\_FIS\_LAB\_AF\_07  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 58,5 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
2P_A_FIS_LAB_AF_07	13,1	8,2	26,0 / 20,0	13,5 / 13,0	-	Feb 1500	9,31

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
2P_A_FIS_LAB_AF_07	0,0	-18,3 / -18,3	0,00	545	0,206	0,163	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
2P_A_FIS_LAB_AF_07	7,2	Apr 1500	0,6	58,5

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
2P_A_FIS_LAB_AF_07							
2P_A_FIS_LAB_AF_07	1	7,2	Apr 1500	545	0,6	58,5	9,31

## Zone Sizing Summary for 2P\_A\_FIS\_LAB\_AF\_08

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 2P\_A\_FIS\_LAB\_AF\_08  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 66,9 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
2P_A_FIS_LAB_AF_08	13,7	8,8	25,9 / 19,8	13,6 / 13,1	-	Feb 1600	8,84

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
2P_A_FIS_LAB_AF_08	0,0	-18,3 / -18,3	0,00	591	0,224	0,177	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
2P_A_FIS_LAB_AF_08	7,8	Apr 1500	0,7	66,9

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
2P_A_FIS_LAB_AF_08							
2P_A_FIS_LAB_AF_08	1	7,8	Apr 1500	591	0,7	66,9	8,84

## Zone Sizing Summary for 2P\_A\_FIS\_LAB\_AF\_09

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 2P\_A\_FIS\_LAB\_AF\_09  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 67,1 m<sup>2</sup>  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m <sup>2</sup> )
2P_A_FIS_LAB_AF_09	13,7	8,8	25,9 / 19,8	13,4 / 12,9	-	Jan 1600	8,73

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
2P_A_FIS_LAB_AF_09	0,0	-18,3 / -18,3	0,00	586	0,221	0,176	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m <sup>2</sup> )
2P_A_FIS_LAB_AF_09	7,8	Apr 1500	0,6	67,1

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m <sup>2</sup> )	Space L/(s·m <sup>2</sup> )
2P_A_FIS_LAB_AF_09							
2P_A_FIS_LAB_AF_09	1	7,8	Apr 1500	586	0,6	67,1	8,73

## Zone Sizing Summary for 2P\_A\_FIS\_LAB\_AF\_10

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 2P\_A\_FIS\_LAB\_AF\_10  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 55,5 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
2P_A_FIS_LAB_AF_10	12,8	7,9	26,1 / 20,1	13,6 / 13,2	-	Jan 1600	9,53

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
2P_A_FIS_LAB_AF_10	0,0	-18,3 / -18,3	0,00	529	0,200	0,159	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
2P_A_FIS_LAB_AF_10	7,0	Apr 1500	0,6	55,5

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
2P_A_FIS_LAB_AF_10							
2P_A_FIS_LAB_AF_10	1	7,0	Apr 1500	529	0,6	55,5	9,53

## Zone Sizing Summary for 2P\_B\_QUI\_LAB\_BALANÇAS

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... 2P\_B\_QUI\_LAB\_BALANÇAS  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 37,6 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
2P_B_QUI_LAB_BALANÇAS	11,8	7,0	26,3 / 20,5	13,1 / 12,7	-	Feb 1700	11,62

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
2P_B_QUI_LAB_BALANÇAS	0,0	-18,3 / -18,3	0,00	437	0,165	0,131	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
2P_B_QUI_LAB_BALANÇAS	5,8	Apr 1500	0,5	37,6

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
2P_B_QUI_LAB_BALANÇAS							
2P_B_QUI_LAB_BALANÇAS	1	5,8	Apr 1500	437	0,5	37,6	11,62



## Zone Sizing Summary for 2P\_B\_QUI\_LAB\_MET\_OTICOS

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name .. 2P\_B\_QUI\_LAB\_MET\_OTICOS  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 58,4 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
2P_B_QUI_LAB_MET_OTICOS	14,3	9,3	25,7 / 19,5	13,3 / 12,8	-	Feb 1600	10,60

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
2P_B_QUI_LAB_MET_OTICOS	0,0	-18,3 / -18,3	0,00	619	0,234	0,186	135

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
2P_B_QUI_LAB_MET_OTICOS	8,2	Apr 1500	0,6	58,4

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
2P_B_QUI_LAB_MET_OTICOS							
2P_B_QUI_LAB_MET_OTICOS	1	8,2	Apr 1500	619	0,6	58,4	10,60

## Zone Sizing Summary for INT\_0P\_AUDITORIO

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... INT\_0P\_AUDITORIO  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 117,4 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
INT_1P_AUDITORIO	63,5	31,6	29,0 / 23,3	13,2 / 12,9	-	Feb 1500	14,15

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
INT_1P_AUDITORIO	0,0	-18,3 / -18,3	0,00	1661	0,628	0,498	1000

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
INT_1P_AUDITORIO	22,0	Jan 1600	1,5	117,4

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
INT_1P_AUDITORIO							
INT_1P_AUDITORIO	1	22,0	Jan 1600	1661	1,5	117,4	14,15

## Zone Sizing Summary for INT\_0P\_NUTRICIONISTA

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... INT\_0P\_NUTRICIONISTA  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 3,6 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
INT_0P_NUTRICIONISTA	1,1	0,8	24,9 / 18,4	13,1 / 12,5	-	Dec 1400	15,88

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
INT_0P_NUTRICIONISTA	0,0	-18,3 / -18,3	0,00	57	0,022	0,017	8

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
INT_0P_NUTRICIONISTA	0,8	Jan 2300	0,2	3,6

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
INT_0P_NUTRICIONISTA							
INT_0P_NUTRICIONISTA	1	0,8	Jan 2300	57	0,2	3,6	15,88

## Zone Sizing Summary for INT\_0P\_REC\_GENEROS

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... INT\_0P\_REC\_GENEROS  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 4,7 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
INT_0P_REC_GENEROS	1,2	0,9	24,9 / 18,2	13,3 / 12,7	-	Jan 1400	14,18

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
INT_0P_REC_GENEROS	0,0	-18,3 / -18,3	0,00	67	0,025	0,020	8

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
INT_0P_REC_GENEROS	0,9	Jan 2300	0,2	4,7

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
<b>INT_0P_REC_GENEROS</b>							
INT_0P_REC_GENEROS	1	0,9	Jan 2300	67	0,2	4,7	14,18

## Zone Sizing Summary for INT\_1P\_SALA\_TECNICA

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... INT\_1P\_SALA\_TECNICA  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 3,0 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
INT_1P_SALA_TECNICA	0,8	0,8	22,9 / 7,3	13,2 / 2,2	-	Nov 1800	23,07

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
INT_1P_SALA_TECNICA	0,0	-18,3 / -18,3	0,00	69	0,026	0,021	0

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
INT_1P_SALA_TECNICA	0,8	Jan 1700	0,2	3,0

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
<b>INT_1P_SALA_TECNICA</b>							
INT_1P_SALA_TECNICA	1	0,8	Jan 1700	69	0,2	3,0	23,07

## Zone Sizing Summary for INT\_2P\_COPIADORA

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name ..... INT\_2P\_COPIADORA  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 16,0 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
INT_2P_COPIADORA	4,5	3,4	24,9 / 18,3	13,0 / 12,4	-	Feb 1700	14,76

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
INT_2P_COPIADORA	0,0	-18,3 / -18,3	0,00	236	0,089	0,071	30

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
INT_2P_COPIADORA	3,1	Jan 1700	0,4	16,0

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
INT_2P_COPIADORA							
INT_2P_COPIADORA	1	3,1	Jan 1700	236	0,4	16,0	14,76

## Zone Sizing Summary for INT\_2P\_D.A.\_FIS\_PREVISÃO

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name .... INT\_2P\_D.A.\_FIS\_PREVISÃO  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 11,4 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
INT_2P_D.A._FIS_PREVISÃO	2,9	2,3	24,8 / 18,0	13,4 / 12,8	-	Feb 1500	14,60

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
INT_2P_D.A._FIS_PREVISÃO	0,0	-18,3 / -18,3	0,00	166	0,063	0,050	15

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
INT_2P_D.A._FIS_PREVISÃO	2,2	Jan 1600	0,2	11,4

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
INT_2P_D.A._FIS_PREVISÃO							
INT_2P_D.A.FIS_PREVISÃO	1	2,2	Jan 1600	166	0,2	11,4	14,60

## Zone Sizing Summary for INT\_2P\_D.A.\_QUI\_PREVISÃO

Project Name: UFBA\_LAB\_FIS\_QUI  
Prepared by: MSA Ar Condicionado e Refrigeração Ltda

10/17/2021  
07:00

### Air System Information

Air System Name .... INT\_2P\_D.A.\_QUI\_PREVISÃO  
Equipment Class ..... TERM  
Air System Type ..... SPLT-FC

Number of zones ..... 1  
Floor Area ..... 12,4 m²  
Location ..... Salvador, Brazil

### Sizing Calculation Information

Calculation Months ..... Jan to Dec  
Sizing Data ..... Calculated

Zone L/s Sizing ..... Sum of space airflow rates  
Space L/s Sizing ..... Individual peak space loads

### Terminal Unit Sizing Data - Cooling

Zone Name	Total Coil Load (kW)	Sens Coil Load (kW)	Coil Entering DB / WB (°C)	Coil Leaving DB / WB (°C)	Water Flow @ 5,6 K (L/s)	Time of Peak Coil Load	Zone L/(s·m²)
INT_2P_D.A._QUI_PREVISÃO	3,1	2,5	24,6 / 17,8	13,3 / 12,7	-	Jan 1700	15,05

### Terminal Unit Sizing Data - Heating, Fan, Ventilation

Zone Name	Heating Coil Load (kW)	Heating Coil Ent/Lvg DB (°C)	Htg Coil Water Flow @11,1 K (L/s)	Fan Design Airflow (L/s)	Fan Motor (BHP)	Fan Motor (kW)	OA Vent Design Airflow (L/s)
INT_2P_D.A._QUI_PREVISÃO	0,0	-18,3 / -18,3	0,00	187	0,071	0,056	15

### Zone Peak Sensible Loads

Zone Name	Zone Cooling Sensible (kW)	Time of Peak Sensible Cooling Load	Zone Heating Load (kW)	Zone Floor Area (m²)
INT_2P_D.A._QUI_PREVISÃO	2,5	Dec 1600	0,2	12,4

### Space Loads and Airflows

Zone Name / Space Name	Mult.	Cooling Sensible (kW)	Time of Peak Sensible Load	Air Flow (L/s)	Heating Load (kW)	Floor Area (m²)	Space L/(s·m²)
INT_2P_D.A._QUI_PREVISÃO							
INT_2P_D.A.QUI_PREVISÃO	1	2,5	Dec 1600	187	0,2	12,4	15,05