UATYA50BBAY1
UATYA50BFC2Y1
UATYA50BFC3Y1

Use as input for the tables, the air condition on supply coil and external coil, determined according to the following formulas.If air conditions on the supply coil and external coil are not present in the table, interpolation is required.

DETERMINATION OF AIR TEMPERATURE ON SUPPLY COIL (use as input in the table)

$$T_{in\ ,sup\ .coil} = T_{indoor} * \left(1 - \frac{x}{100}\right) + T_{outdoor} * \frac{x}{100}$$

Where:

$T_{in\ ,sup\ .coil}$ is the temperature that has to be used as input for the table of the *air temperature on supply coil data set*

T_{indoor} is the temperature of the indoor ambient

$T_{outdoor}$ is the temperature of the of the outdoor ambient

For unit with dampers , x is the amount (in %) of the fresh air. As factory default this is set to 30%, therefore the above calculation is:

(e.g. with $T_{indoor} = 27°C$ and $T_{outdoor} = 35°C$)

$$T_{in\ ,sup\ .coil} = T_{indoor} * 0.7 + T_{outdoor} * 0.3 = 27 * 0.7 + 35 * 0.3 = 29.4\ °C$$

DETERMINATION OF AIR TEMPERATURE ON THE EXTERNAL COIL (use as input in the table)

For units basic units and two dampers units, the thermodynamic heat recovery on the external coil is not present. For this reason, use:

$$T_{in,ext\ .coil} = T_{outdoor}$$

For three dampers units, the thermodynamic heat recovery on the external coil is present. For this reason, use:

$$T_{in,ext\ .coil} = T_{indoor} * \frac{x_{exhaust}}{100} + T_{outdoor} * \left(1 - \frac{x_{exhaust}}{100}\right)$$

Where:

$T_{in,ext\ .coil}$ is the temperature that has to be used as input for the table of the *air temperature on the outdoor coil data set*
T_{indoor} is the temperature of the indoor ambient.
$T_{outdoor}$ is the temperature of the outdoor ambient.
$x_{exhaust}$ is the ratio between the *exhaust air flow*, $V_{exhaust}$, and the *total air flow on the external coils*, V_{axial} :

$$x_{exhaust} = \frac{V_{exhaust}}{V_{axial}} = \frac{x * V_{intake}}{V_{axial}}$$

Where:

x is the amount (in %) of the fresh air. As factory default this is set to 30%

V_{intake} is the return air flow. As factory default, the return air flow is equal to the supply air flow.
(e.g. with $T_{indoor} = 27°C$, $T_{outdoor} = 35°C$, x = 30% , V_{intake} = 4950 mc/h , V_{axial} = 11500 mc/h)

$$T_{in,ext\ .coil} = T_{indoor} * \frac{x_{exhaust}}{100} + T_{outdoor} * \left(1 - \frac{x_{exhaust}}{100}\right) = T_{indoor} * \frac{\frac{x * V_{intake}}{V_{axial}}}{100} + T_{outdoor} * \left(1 - \frac{\frac{x * V_{intake}}{V_{axial}}}{100}\right)$$

$$= T_{indoor} * \frac{\frac{30 * 4950}{11500}}{100} + T_{outdoor} * \left(1 - \frac{\frac{30 * 4950}{11500}}{100}\right) = 27 * 0{,}129 + 35 * (1 - 0{,}129) = 33{,}96\ °C$$