UNI-PRO

DEVELOPMENT ENVIRONMENT FOR PROGRAMMABLE CONTROLLERS

HVAC CONTROL LIBRARIES MANUAL

CODE 114UPROHCLE10

Important notice

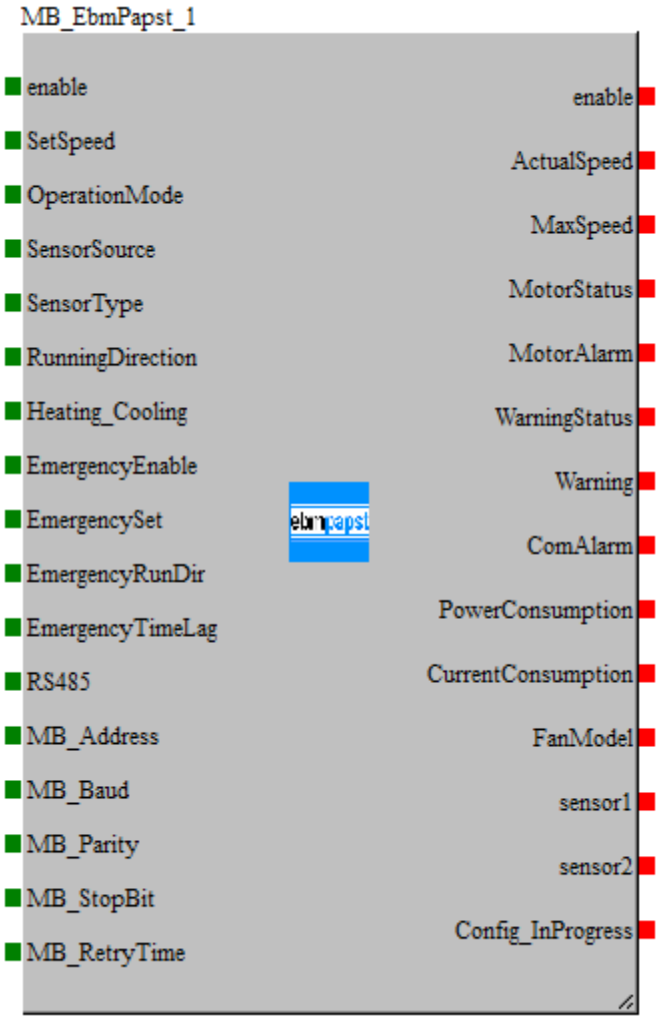
This Instruction Manual should be read carefully before use, and all warnings should be observed; the Manual should then be kept for future reference.

Summary

1 HVAC Control Libraries

1.1 Modbus Master Control

EBM PAPST Library



Inputs designated as "optional" couldn’t be connected, taking their default value

Input	***Type***	***Range***	***Description***
enable	CJ_BIT	0..1	Enabling library (optional, default = 1)
SetSpeed	CJ_WORD	0..100.00[%] 0..10000[rpm]	Control Setpoint fan speed if Op Mode=0 : [%] if Op Mode=1 : not used if Op Mode=2 : [rpm]

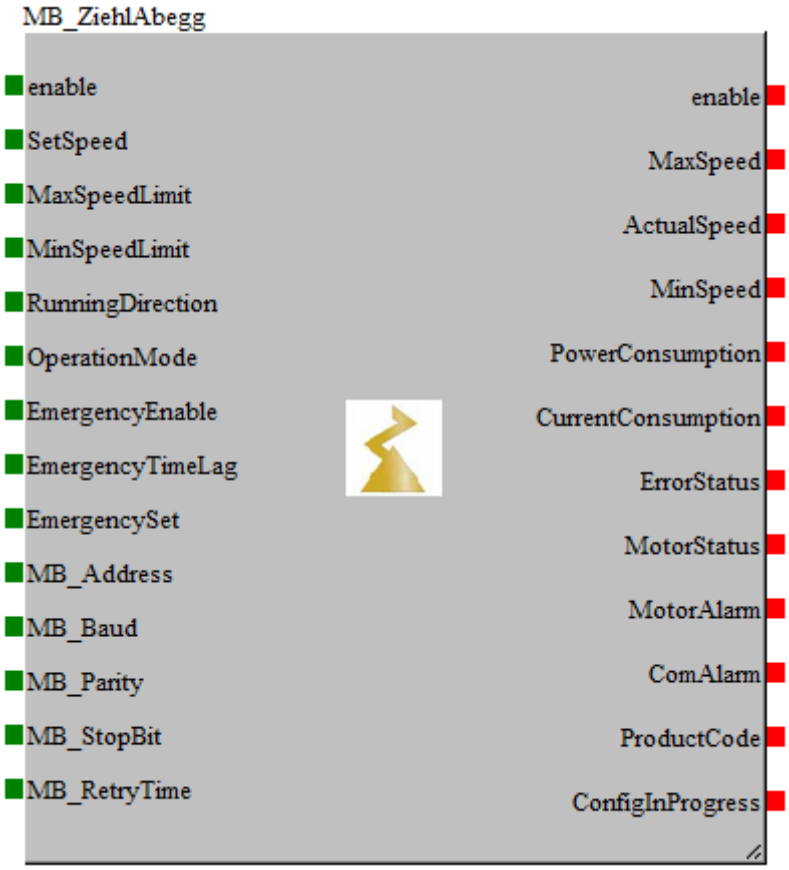
OperationMode	CJ_BYTE	0..2	0 = Closed-loop Speed control 1 = Closed-loop Sensor control 2 = Open loop PWM control (optional, default = 0)
Sensor Source	CJ_BYTE	0..4	The source current sensor used in mode 1 = Closed-loop Sensor control: 0 = Input1, 1 = Input2, 2 = Max(In1,In2), 3 = Min(In1,In2), 4 = Mean(In1,In2) (optional, default = 0 [Input1])
SensorType	CJ_BYTE	0..1	Type of connected sensors: 0 = 0-10V, 1 = 4-20mA (optional, default = 0 [0-10V])
RunningDirection	CJ_BYTE	0..1	0 = anti-clockwise 1 = clockwise (optional, default = 0)
Heating_Cooling	CJ_BIT	0..1	Controller function 0 = positive (Control variable = set value – actual value) 1 = negative (Control variable = actual value – set value) (optional, default = 0)
EmergencyEnable	CJ_BIT	0..1	Enable emergency mode (optional, default = 0)
EmergencySet	CJ_SHORT	0..100.00	Emergency Setpoint fan speed [%] (optional, default = 0)
EmergencyRunningDirection	CJ_BYTE	0..2	0 = anti-clockwise 1 = clockwise 2 = none (configured direction of rotation remains unchanged) (optional, default = 2)
EmergencyTimeLag	CJ_WORD	0..2400 [100ms]	Timeout from the reception of the last valid packet after which the fan enter in emergency mode (optional, default = 0)
RS485	CJ_BIT	0..1	Set Value Source 0 = analog input 0 to 10V 1 = RS485 (optional, default = 1)
MB_Address	CJ_BYTE	1..247	Modbus address

MB_Baud	CJ_BYTE	0..7	0: 1200 Kbit 1: 2400 Kbit 2: 4800 Kbit 3: 9600 Kbit 4: 19200 Kbit 5: 28800 Kbit 6: 38400 Kbit 7: 57600 Kbit
MB_Parity	CJ_BYTE	0..2	*0: NONE.* No parity *1: ODD.* Odd parity *2: EVEN.* Even parity
MB_StopBit	CJ_BYTE	0..1	*0: 1 stop bit* *1: 2 stop bit*
MB_RetryTime	CJ_WORD	0..2400 [100ms]	time to wait before trying to communicate after a connecting situation inactive

Output	***Type***	***Range***	***Description***
enable	CJ_BIT	0..1	Status of the *enable* input
ActualSpeed	CJ_SHORT	0..65535 [rpm]	Current value of the motor speed
MaxSpeed	CJ_WORD	0.. 65535 [rpm]	Maximum fan speed value (read from the motor)
MotorStatus	CJ_WORD	0..65535 [bits]	Bit12 = UzLow: DC-link undervoltage Bit7 = BLK: Locked motor Bit6 = HLL: Hall sensor error Bit5 = TFM: Motor overheated Bit4 = FB: Fan bad (general error) *) Bit3 = SKF: Communication error between master controller and slave controller Bit2 = TFE: Power mod overheated Bit1 = Communication alarm Bit0 = PHA: Phase failure (3-phase devices) or mains undervoltage (1-phase devices)
MotorAlarm	CJ_BIT	0..1	Motor alarm state (at least one flag to 1)

WarningStatus	CJ_WORD	0..65535 [bits]	Bit15 = LRF: Shedding function Bit14 = UeHigh: Supply voltage High Bit13 = 0 Bit12 = UzHigh: DC-link voltage High Bit11 = Heating: Heating activated Bit10 = Cable break: at set AI Bit9 = n_Low: Actual speed < Limit Bit8 = Reserved Bit7 = Brake: if used in opposite dir Bit6 = UzLow: DC-link voltage Low Bit5 = TEl_high: Electronic T°high Bit4 = TM_high: Motor T°high Bit3 = TE_high: Output stage T° high Bit2 = P_Limit: Power limit in mesh Bit1 = L_high: Line impedence high Bit0 = I_high: Current limit in mesh
Warning	CJ_BIT	0..1	Motor warning state (at least one flag to 1)
ComAlarm	CJ_BIT	0..1	Communication error
PowerConsumption	CJ_WORD	0..65535	Instantaneous Power consumption
CurrentConsumption	CJ_WORD	0..65535	Instantaneous Current consumption
FanModel	CJ_WORD	0..65535	ID model
Sensor1	CJ_WORD	0.00..10.00 [V] 4.00..20.00 [mA]	Sensor 1 value
Sensor2	CJ_WORD	0.00..10.00 [V] 4.00..20.00 [mA]	Sensor 2 value
Config_InProgress	CJ_BIT	0..1	Changes on some parameters have requested to reconfigure the fan. 1 = Configuration in progress

ZIEHL ABEGG Library



Inputs designated as "optional" couldn't be connected, taking their default value

Input	***Type***	***Range***	***Description***
enable	CJ_BIT	0..1	Enabling library (optional, default = 1)
SetSpeed	CJ_WORD	0..MaxSpeed[rpm] 0..32767[abs] 0..100[%]	Control Setpoint fan speed if Op Mode=1 : [rpm] if Op Mode=2 : absolute value, . → 32767 = 100% if Op Mode=3 : [%]
Max Speed Limit	CJ_WORD	0..65535	Forces the Maximal Speed If = 0, it uses the internal Max Speed value (optional, default = 0)
Min Speed Limit	CJ_WORD	0..65535	Forces the Minimal Speed (optional, default = 0)
RunningDirection	CJ_BYTE	0..1	0 = anti-clockwise 1 = clockwise (optional, default = 0)

OperationMode	CJ_BYTE	0..2	Speed Control Mode 0 = Reserved 1 = Speed value [rpm] 2 = Absolute value [0..32767] 3 = Percentage value [0..100%] (optional, default = 3)
EmergencyEnable	CJ_BIT	0..1	Enable emergency mode (optional, default = 0)
EmergencySet	CJ_SHORT	0..100	Emergency Setpoint fan speed [%] (optional, default = 0)
EmergencyTimeLag	CJ_WORD	0..256 [sec]	Timeout from the reception of the last valid packet after which the fan enter in emergency mode (optional, default = 10)
MB_Address	CJ_BYTE	1..247	Modbus address
MB_Baud	CJ_BYTE	2..6	2: 4800 Kbit 3: 9600 Kbit 4: 19200 Kbit 5: 28800 Kbit (not impl.) 6: 38400 Kbit
MB_Parity	CJ_BYTE	0..2	*0: NONE.* No parity *1: ODD.* Odd parity *2: EVEN.* Even parity
MB_StopBit	CJ_BYTE	0..1	*0: 1 stop bit* *1: 2 stop bit*
MB_RetryTime	CJ_WORD	0..256 [1sec]	time to wait before trying to communicate after a connecting situation inactive

Output	***Type***	***Range***	***Description***
enable	CJ_BIT	0..1	Status of the *enable* input
MaxSpeed	CJ_WORD	0.. 65535 [rpm]	Maximum fan speed value (read from the motor)
ActualSpeed	CJ_SHORT	0..65535 [rpm]	Current value of the motor speed
MinSpeed	CJ_WORD	0.. 65535 [rpm]	Minimum fan speed value (read from the motor)
PowerConsumption	CJ_WORD	0..65535	Instantaneous Power consumption
CurrentConsumption	CJ_WORD	0..65535	Instantaneous Current consumption

ErrorStatus	CJ_WORD	0..65535 [bits]	Bit15 = COM Error (Watchdog) Bit14 = Internal operating Error Bit13 = Temperature Error Bit12 = Fire Alarm Bit11 = DC-Link overvoltage Bit10 = Current Peak Bit9 = Motor Blocked Bit8 = Hall Sensor Error Bit7 = Fan Bad Bit6 = Line Error Bit5 = Low Power voltage Bit4 = Power over voltage Bit3 = DC-Link Low Bit2 = DC-Link High Bit1 = GND Ground Error Bit0 = IGBT Error
MotorStatus	CJ_WORD	0..65535 [bits]	Bit15 = Reserved Bit14 = Reverse Active Bit13 = Temp. Alarm Inside Bit12 = Motor in Start Bit11 =Temp. Alarm IGBT Bit10 = K1 state Bit9 = E1 digital state Bit8 = D1 state Bit7 = Limited current Bit6 = Weak Filter Bit5 = Safety Shutdown Bit4 = Wrong rotation direction Bit3 = Sinefilter Bit2 = IGBT check Bit1 = Temperature management Bit0 = Motor in Stop
MotorAlarm	CJ_BIT	0..1	Motor alarm state (at least one flag to 1)
ComAlarm	CJ_BIT	0..1	Communication error
ProductCode	CJ_WORD	0..65535	Bit [15..8] Family ID . e. g. 01 = ECBlue Bit [0..7] Product Variant . e. g. 00 = Basic
Config_InProgress	CJ_BIT	0..1	Changes on some parameters have requested to reconfigure the fan. 1 = Configuration in progress

UNI-PRO – HVAC Control libraries manual.
Version 1.0 - June 2018.
Code 114UPROHCLE10.
File 114UPROHCLE10.pdf.

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