

# UTHT Electronics

## C++ PM100 (Inverter) CAN Code

### class command\_message

```
int* create_command_message( message_type command_message,
                             float torque_val, //Value in N.m
                             float speed_val, //RPM
                             inverter_direction direction_command,
                             inverter_enable enable_command );
```

Parameters:  
ALL info we need  
to generate CAN  
command msg

Returns:  
Pointer to CAN  
Data Byte Array (8-Cell)

```
int *CAN_msg = ..... create_command_message( ... );
cout << CAN_msg[0]
      can access each data byte
      0 - 7
```

Necessary  
Pieces of info:  
→ speed OR torque val  
→ PM100 Direction  
→ PM100 Enable

8 CAN Data Bytes

{0, 0, 0, 0, 0, 0, 0, 0}

### Custom ENUMS made :

```
//types of CAN messages //command message variables for inverter
typedef enum m_type {      typedef enum i_direction {
    BROADCAST_M,           REVERSE, //clock-wise
    COMMAND_TOURQUE_M,     FORWARD //counter-clock-wise
    COMMAND_SPEED_M
} message_type;           } inverter_direction;
```

```
typedef enum i_enable {
    ENABLE,
    DISABLE
} inverter_enable;
```

### class broadcast\_message

```
void print_vsm_state(int message_arr[9]);
```

Parameter:  
9-Cell Array  
(CAN-ID + CAN Data Bytes)

Returns:  
Prints out the PM100's  
current VSM State

```
void print_inverter_state(int message_arr[9]);
```

Same as function above : Prints out "Inverter State"

We receive a CAN msg  
(CAN ID + 8 Data Bytes):

Create 9-Cell Array:  
{CAN-ID, 0, 0, 0, 0, 0, 0, 0, 0}

Print/Return VSM  
AND/OR Inverter State

```
typedef enum vsm_state      typedef enum inverter_state
{
    VSM_START,              POWER_ON,
    PRE_CHARGE_INIT,        STOP,
    PRE_CHARGE_ACTIVE,      OPEN_LOOP,
    PRE_CHARGE_COMPLETE,    CLOSED_LOOP,
    VSM_WAIT,               WAIT,
    VSM_READY,              IDLE_RUN = 8,
    MOTOR_RUNNING,          IDLE_STOP
    BLINK_FAULT_CODE,       } inverter_state;
    SHUTDOWN_IN_PROGRESS = 14,
    RECYCLE_POWER
} vsm_state;
```

More Custom ENUMS