From mpuig@ll.iac.esTue Apr 28 09:51:59 1998
Date: Tue, 28 Apr 1998 00:55:34 +0100 (WET DST)
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Subject: Re: Ingrid Motors: epur si mouve (with attach!)

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X-Sun-Data-Type: text
X-Sun-Data-Description: text
X-Sun-Data-Name: text
X-Sun-Charset: iso-8859-1
X-Sun-Content-Lines: 19

Sorry,

The attached file (imcs.h) is here.

Cheers,

  Martí


--------------------------------------------------------------------------
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X-Sun-Data-Type: h-file
X-Sun-Data-Description: h-file
X-Sun-Data-Name: imcs.h
X-Sun-Charset: us-ascii
X-Sun-Content-Lines: 269

```
/*
#  ##############################################################################
#  ##       ##  ###  ##       ##       ##       ##      #####
#  ##       ##  ###  ##       ##       ##       ##       ####  Isaac
#  ####   ####   ##  ##   ######  ###  ####   ####  ###   ###  Newton
#  ####   ####    #  ##   ######  ###  ####   ####  ####   ##  Group
#  ####   ####       ##   #   ##       ####   ####  # ####  ##  Red
#  ####   ####  #    ##   #   ##       ####   ####  #####  ##  Imaging
#  ####   ####  ##   ##   ##  ##     ######   ####  ####   ##  Detector
#  ####   ####  ###  ##   ##  ##  #   #####   ####  ###   ###
#  ##       ##  ###  ##       ##  ##   ##       ##       ####
#  ##       ##  ###  ##       ##  ###   #       ##      #####
#  ##############################################################################
#                          Isaac Newton Group (ING)
#                     Royal Greenwich Observatory (RGO)
#                 Instituto de Astrofisica de Canarias (IAC)
#  ##############################################################################
*/
/*
 * FILE NAME
 * ---------
```

```
 *   imcs.h
 *
 * DESCRIPTION
 * -----------
 *   This is the IMCS include header file. Constants and strings are
 *   defined here. This file must be included in the SNL programs.
 *
 * AUTHOR
 * ------
 *   Marti Pi (mpuig@iac.es), IAC Software
 *
 * PROJECT
 * -------
 *   INGRID
 *
 * SUBSYSTEM
 * ---------
 *   INGRID Mechanism Control Software (IMCS)
 *
 * COMMENTS
 * --------
 *   Edit this file and recompile to change filter names, positions, ...
 *
 * HISTORY
 * -------
 *
 *
 */

/* Other C header files */
#include <stdio.h>
#include <stdlib.h>


/* EPICS header files */

#include <cad.h>  /* CAD definitions $EPICS/base/include/cad.h */
#include <car.h>  /* CAR definitions $EPICS/base/include/car.h */
#include <sir.h>  /* CAR definitions $EPICS/base/include/sir.h */

/* Debugging */

/*#define NODEBUG*/

volatile int Ingrid_Debug=5;

#ifdef NODEBUG
#define Debug(l,FMT,MECH,VAL) ;
#else
#include <taskLib.h>
#define Debug(l,FMT,MECH,VAL) { if(l<=Ingrid_Debug)  \
                                    { printf("%s:",taskName(taskIdSelf ())); \
                                      printf("%s(%d):",__FILE__,__LINE__);  \
                                      printf(FMT,MECH,VAL); } }
#endif

/* Boolean */
#define FALSE     0
#define TRUE   1

/* Motor calibration */
```

```
#define USE 0
#define SET 1


/* Mechanisms */
#define UNKNOWN    0    /* Unknown Mechanism !   */
#define FWHEEL1      1  /* Filter Wheel 1        */
#define FWHEEL2      2  /* Filter Wheel 2        */
#define PUPIL        3   /* Cold Pupil Stop Wheel */
#define PIMAGER      4   /* Pupil Imager          */
#define FOCUS        5   /* Detector Focus        */

char *MECHSTR[]={"Unknown mechanism !",
                 "Filter Wheel 1",
                 "Filter Wheel 2",
                 "Cold Pupil Stop Wheel",
                 "Pupil Imager",
                 "Detector Focus"};

/* User Commands */
#define COMM_IDLE            0      /* Idle                          */
#define COMM_DATUM           1      /* Move to a reference position */
#define COMM_MOVE             2     /* Move to a demand position    */
#define COMM_STOP             3     /* Stop current motion          */
#define COMM_UPDATE     4     /* Update status                */

char *COMMNAME[]={"IDLE",
                     "DATUM",
                     "MOVE",
                     "STOP",
                     "UPDATE"};

/* Command Validation Messages */
#define ACCEPT      0
#define REJECT_IDP      1
#define REJECT_CNS      2
#define REJECT_UCD      3

char *COMMSTR[]={"Accepted - Ok",
                 "Rejected - Invalid demand parameter",
                 "Rejected - Command not supported",
                 "Rejected - Unknown CAD directive"};


/* Filter Wheels */
#define NUM_FWHEEL_POSITIONS 11

#define FWHEEL_RES 0.1 /* degrees */

/* Filter Wheel positions and status */
#define FWHEEL_POS1  0
#define FWHEEL_POS2  1
#define FWHEEL_POS3  2
#define FWHEEL_POS4  3
#define FWHEEL_POS5  4
#define FWHEEL_POS6  5
#define FWHEEL_POS7  6
#define FWHEEL_POS8  7
#define FWHEEL_POS9  8
#define FWHEEL_POS10 9
#define FWHEEL_POS11 10
```

```
#define FWHEEL_MOVN  11 /* Moving */
#define FWHEEL_STOP  12  /* Stopped: intermediate position */

/* Names: */
char *FWHEELSTR[]={"OPEN",
                   "FILTER_NAME_1",
                   "FILTER_NAME_2",
                   "FILTER_NAME_3",
                   "FILTER_NAME_4",
                   "FILTER_NAME_5",
                   "FILTER_NAME_6",
                   "FILTER_NAME_7",
                   "FILTER_NAME_8",
                   "FILTER_NAME_9",
                   "FILTER_NAME_10",
                   "MOVING",
                   "STOPPED"};

/* Absolute Position in degrees: now using 360/11 = 3 2.73 */
double  FWHEELDEG[]={0.0,
                        32.73,
                        65.46,
                        98.19,
                        130.92,
                        163.65,
                        196.38,
                        229.11,
                        261.84,
                        294.57,
                        327.30};

/* Cold Pupil Stop Wheels */
#define NUM_PUPIL_POSITIONS  12

/* Pupil Stop Wheel positions and status */
#define PUPIL_POS1  0
#define PUPIL_POS2  1
#define PUPIL_POS3  2
#define PUPIL_POS4  3
#define PUPIL_POS5  4
#define PUPIL_POS6  5
#define PUPIL_POS7  6
#define PUPIL_POS8  7
#define PUPIL_POS9  8
#define PUPIL_POS10 9
#define PUPIL_POS11 10
#define PUPIL_POS12 11
#define PUPIL_MOVN  12  /* Moving */
#define PUPIL_STOP  13   /* Stopped: intermediate position */

/* Names: */
char *PUPILSTR[]={"OPEN",
                  "PUPIL_NAME_1",
                  "PUPIL_NAME_2",
                  "PUPIL_NAME_3",
                  "PUPIL_NAME_4",
                  "PUPIL_NAME_5",
                  "PUPIL_NAME_6",
                  "PUPIL_NAME_7",
                  "PUPIL_NAME_8",
                  "PUPIL_NAME_9",
```

```
                  "PUPIL_NAME_10",
                  "PUPIL_NAME_11",
                  "MOVING",
                  "STOPPED"};

/* Absolute Position in degrees: now using 360/12 = 30 */
double  PUPILDEG[]={0.0,
                        30.0,
                        60.0,
                        90.0,
                        120.0,
                        150.0,
                        180.0,
                        210.0,
                        240.0,
                        270.0,
                        300.0,
                        330.0};

/* Pupil Imager positions and status */
#define PIMAGER_IN       0
#define PIMAGER_OUT  1
#define PIMAGER_MOVN 2  /* Moving */
#define PIMAGER_STOP 3  /* Stopped: intermediate position */

/* Names: */
char *PIMAGERSTR[]={"IN",
                    "OUT",
                    "MOVING",
                    "STOPPED"};

/* Absolute Position in steps: now IN=0 steps, OUT=2000 steps */
int PIMAGERSTEP[]={0, 2000};

/* Focus limits */
#define FOCUS_LLM 0
#define FOCUS_HLM 2000

/* Driver Status (see database ingrid:{mechname}:driver) */
#define DRIVER_OK    0
#define DRIVER_FAULT 1

/* Errors and messages, 0 & 1 reserved */
#define ERROR_NONE        2
#define ERROR_LVIO              3
#define ERROR_HLS        4
#define ERROR_LLS        5
#define ERROR_DATUM             6
#define ERROR_POS        7
#define ERROR_NOT_MOVING        8
#define ERROR_STOPPED    9
#define ERROR_DRIVER    10

char *ERRSTR[]={"","", /* reserved */
                   "Ok",
                "Software Limit Violation",
                "High Limit Switch detected while moving",
                "Low Limit Switch detected while moving",
                "Datum failed",
                "Position not reached",
                "Mechanism is not moving",
```

```
"Mechanism Stopped"
"Driver fault. Check Motor drivers"};
```