# Addendum valid for Emotron FDU/VFX 2.1 AC drives software version V5.14.

Note that this addendum applies to:

- Manual 01-7491-0Xr1 for FDU 2.1
- Manual 01-7492-0Xr1 for VFX 2.1.

## Safety Instructions

### Communication Fault

The default setting for communication supervision is **OFF,** which means no action will be taken if a COMM error occurs and a Fieldbus fault is detected.
If supervision is required, adjust the settings in parameters [2641] and [2643].

## 1.2.1 Instruction manuals for optional equipment

*Table 1 Available options and documents*

| Option | Valid instruction manual/document number |
|---|---|
| I/O board | I/O board 2.0, instructionmanual / 01-5916-01 |
| Encoder board | Emotron Encoder board 2.0, Instruction manual / 01-5917-01 |
| PTC/PT100 board | PTC/PT100 board 2.0, instruction manual / 01-5920-01 |
| CRIO board (VFX) | Emotron AC Drive Crane option 2.0, Instruction manual |
| Crane interface (VFX) | |
| Fieldbus – Profibus | Fieldbus Option, Instruction manual / 01-3698-01 |
| Fieldbus – DeviceNet | |
| Fieldbus – CANopen | |
| Ethernet - Modbus TCP | |
| Ethernet – EtherCAT | |
| Ethernet - Profinet IO 1-port | |
| Ethernet - Profinet IO 2-port | |
| Ethernet - Profinet IO S2 2-port | |
| Ethernet - EtherNet/IP 2-port | |
| RS232/RS485 isolated | Emotron isolated RS232 / 485 2.0 option Instruction manual / 01-5919-01 |
| Control panel kit,<br>Incl blank panel | Emotron FDU/VFX 2.0<br>External Control Panel, instruction manual / 01-5928-01 |
| Control panel kit<br>Incl control panel | |
| Handheld Control Panel<br>HCP2.0 | Emotron HCP 2.0,<br>instrucion manual / 01-5925-01 |
| OSTO_100 option board | Emotron OSTO_100<br>Safe Torque Off (STO)<br>Instruction manual /<br>01-7513-11 |
| Overshoot clamp | Overshoot clamp<br>Datasheet/Instruction /<br>01-5933-11 |
| Liquid cooling | Emotron FDU/VFX 2.0<br>Liquid Cooling, instruction<br>manual / 01-4636-01 |
| Output choke | Output coils<br>Datasheet/Instruction /<br>01-3132-11 |
| AFE- Active front end | Emotron VFX/FDU 2.1<br>Emotron_AFR_AFG 2.1_manual_01-7690-01r1_EN |
| EmoDrive App | EmoDrive App Instruction<br>manual / 01-7776-01 |

## 1.4 Type code number

| Position for 002-3K0 | Configuration | |
|---|---|---|
| 1 | AC drive type | VFX |
| 2 | Supply voltage | 48=480 V mains<br>52=525 V mains<br>69=690 V mains |
| 3 | Rated current (A) continuous | -002=2.0 A<br>-<br>-3K0=3000 A |
| 4 | Protection class | 20=IP20 - Intended for mounting inside a cabinet<br>21=IP21 - Intended for wall-mounting<br>54=IP54 - Intended for wall-mounting |
| 5 | Control panel | –=Blank panel<br>D=4-line Control panel, standard IP2X/54<br>E=4-line Control panel with Bluetooth (option IP2X/54)<br>F=4-line Control panel with WiFi (option IP2X/54) |
| 6 | EMC option | E=Standard EMC (Category C3)<br>F=Extended EMC (Category C2)<br>I=IT-Net |
| 7 | Brake chopper option | –=No chopper<br>B=Chopper built in<br>D=DC+/- interface |
| 8 | Stand-by power supply option | –=No SBS (24V input included in Control board 2.1)<br>S=SBS included (code not used with Control board 2.1) |
| 9 | Safe Torque Off option | –=No Safe Torque Off<br>O=Safe Torque Off included |
| 10 | Brand label | A=Standard |
| 11 | Coated boards, option | –=Standard, not coated boards IP54<br>V=Coated boards, option IP54 (standard IP2X) |
| 12 | Option position 1 | N=No option<br>C=Crane I/O (max. 1)<br>E=Encoder (max. 1)<br>P=PTC/PT100 (max. 2)<br>I=Extended I/O (max. 3) |
| 13 | Option position 2 | |
| 14 | Option position 3 | |
| 15 | Option position, communication | N= No option<br>D= DeviceNet<br>P= Profibus<br>S= RS232/485<br>M= Modbus/TCP 1-port<br>H= Modbus/TCP 2-port<br>E= EtherCAT<br>A= Profinet IO 1-port<br>B= Profinet IO 2-port<br>G= EtherNet/IP 2-port<br>J = Profinet IO S2, 2-port M40<br>C= CANopen |
| 16 | Software type | A= Standard software |
| 17 | Motor PTC.<br>(Only valid for 002-105/B-D2(69)) | N= No option<br>P= PTC |
| 18 | Gland kit.<br>(Only valid for 002-074/IP54) | –= Glands not included<br>G= Gland kit included |
| 19 | Approval/certification | –= CE approved<br>D= Marine DNV Product certificate (above 100 kW) + CE approved<br>M= Marine version + CE approved<br>U=UL/cUL approved |
| 20 | Painted AC drive | A=Standard paint |

## 10.2.1 The display

*Table 29*

| Digits | Description | Bit* |
|---|---|---|
| Stp | Motor is stopped | 0 |
| Run | Motor runs | 1 |
| Acc | Acceleration | 2 |
| Dec | Deceleration | 3 |
| Trp | Tripped | 4 |
| STO | Operating Safe Torque Off, flashing when activated | 5 |
| VL | Operating at voltage limit | 6 |
| SL | Operating at speed limit | 7 |
| CL | Operating at current limit | 8 |
| TL | Operating at torque limit | 9 |
| OT | Operating at temperature limit | 10 |
| $I^2t$ | Active I2t protection | 11 |
| LV | Operating at low voltage | 12 |
| Sby | Operating from Standby power supply | 13 |
| LCL | Operating with low cooling liquid level | 14 |
| Slp | Sleep mode | 15 |
| SPS | Spin start active | 16 |
| PCL | Pump cleaning active | 17 |
| M/S | Slave inverter in a master-slave configuration | 18 |
| Opt | Option specific indication | 19 |
| CRI | Crane option communication warning | 20 |
| LVS | Low voltage override sleep mode | 21 |

## 11.7.2 Status [720]
## Warning [722]

| Communication integer value | Warning message |
|---|---|
| 0 | No Error |
| 1 | Motor $I^2t$ |
| 2 | PTC |
| 3 | Motor lost |
| 4 | Locked rotor |
| 5 | ExtTrip1* |
| 6 | Mon MaxAlarm |
| 7 | Mon MinAlarm |
| 8 | Comm error |
| 9 | PT100 |
| 10 | Crane Deviat |
| 11 | Pump |
| 12 | Ext Mot Temp |
| 13 | LC Level |
| 14 | Brake |
| 15 | Option |
| 16 | Over temp |
| 17 | Over curr F |
| 18 | Over volt D |
| 19 | Over volt G |
| 20 | Over volt |
| 21 | Over speed |
| 22 | Under voltage |
| 23 | Power fault |
| 24 | Desat |
| 25 | DClink error |
| 26 | Int error |
| 27 | Ovolt m cut |
| 28 | Over voltage |
| 29 | STO Active |
| 30 | Crane Comm |
| 31 | Encoder |
| 32 | ExtTrip2* |
| 33 | AnIn<Offset |
| 34 | ExtTrip3* |
| 35 | ExtTrip4* |
| 36 | MaxPumpClean |
| 37 | Option 2 |
| 38 | SlaveCB |
| 39 | TL Trip |

* Warning messages ExtTrip1 - ExtTrip4 are configurable in menu [430].

## 12.1 Trips, warnings and limits

*Table 44 List of trips and warnings*

| Trip/Warning messages | Selections | Trip (Normal/ Soft) | Warning indicators (Area D) |
|---|---|---|---|
| Motor I2t | Trip/Off/Limit | Normal/Soft:I2t | |
| PTC | Trip/Off | Normal/Soft | |
| Motor PTC | On | Normal | |
| PT100 | Trip/Off | Normal/Soft | |
| Motor lost | Trip/Off | Normal | |
| Locked rotor | Trip/Off | Normal | |
| ExtTrip1 | Via DigIn | Normal/Soft | |
| Ext Mot Temp | Via DigIn | Normal/Soft | |
| Mon MaxAlarm | Trip/Off/Warn | Normal/Soft | |
| Mon MinAlarm | Trip/Off/Warn | Normal/Soft | |
| Comm error | Trip/Off/Warn/Change PSet | Normal/Soft | |
| CRIO Dev | Via Option | Normal | |
| CRIO Comm | Via Option | Normal | |
| Encoder | Trip/Off | Normal | |
| Pump | Via Option | Normal | |
| Over temp | On | Normal | OT |
| Over curr F | On | Normal | |
| Over volt D | On | Normal | |
| Over volt G | On | Normal | |
| Over volt | On | Normal | |
| Over speed | On | Normal | |
| Under voltage | On | Normal | LV |
| LC Level | Trip/Off/Warn Via DigIn | Normal/Soft | LCL |
| Desat ### * | On | Normal | |
| DClink error | On | Normal | |
| Power Fault PF #### * | On | Normal | |
| Ovolt m cut | On | Normal | |
| Over voltage | Warning | | VL |
| STO Active | Warning | | STO |
| Brake | Trip/Off/Warn | Normal | |
| OPTION | On | Normal | |
| Internal error | | Normal | |
| ExtTrip2 | Via DigIn | Normal/Soft | |
| AnIn<Offset | Off/Trip/Warn | Normal/Soft | |
| ExtTrip3 | Via DigIn Normal/Soft | Via DigIn Normal/Soft | |
| ExtTrip4 | Via DigIn Normal/Soft | Via DigIn Normal/Soft | |
| MaxPumpClean | Trip/Off | Normal | |
| TL Trip | Off/On | Normal/Soft | |

## 12.2.4 Autoreset Trip

*Table 45 Trip condition, their possible causes and remedial action*

| Trip condition | Possible Cause | Remedy | Size** |
|---|---|---|---|
| Internal error | Internal alarm | Contact service | |
| Mon MaxAlarm | Max alarm level (overload) has been reached. | -Check the load condition of the machine<br>-Check the monitor setting in section 11.4.1, page 145. | |
| Mon MinAlarm | Min alarm level (underload) has been reached. | -Check the load condition of the machine<br>-Check the monitor setting in section 11.4.1, page 145. | |
| Comm error | Error on serial communication (option) | - Check cables and connection of the serial communication.<br>- Check all settings with regard to the serial communication<br>- Restart the equipment including the AC drive | |
| Crane Deviat | CRANE board detecting deviation in motor operation.<br>**NOTE: Only used in Crane Control.** | - Check encoder signals<br>- Check Deviation jumper on Crane option board.<br>- Check the settings in menus [3AB] & [3AC] | |
| CraneComm | Lost communication with CRANE board.<br>**NOTE: Only used in Crane Control.** | - Check CRIO board<br>- Check CRIO cable and signals. | |
| Encoder | Lost encoder board, encoder cable or encoder pulses.<br>Motor speed deviation in between reference and measured speed detected.<br>**NOTE: Only valid if option board Encoder is used.** | - Check encoder board.<br>- Check encoder cable and signals.<br>- Check motor operation.<br>- Check speed deviation settings [22G#].<br>- Check speed PI controller settings [37#].<br>- Check torque limit setting [351]<br>- Disable encoder, set menu [22B] to OFF. | |
| Pump | No master pump can be selected due to error in feedback signalling.<br>**NOTE: Only used in Pump Control.** | - Check cables and wiring for Pump feedback signals<br>- Check settings with regard to the pump feedback digital inputs | |
| Over temp | Heatsink temperature too high:<br>- Too high ambient temperature of the AC drive<br>- Insufficient cooling<br>- Too high current<br>- Blocked or stuffed fans | - Check the cooling of the AC drive cabinet.<br>- Check the functionality of the built-in fans. The fans must switch on automatically if the heatsink temperature gets too high. At power up the fans are briefly switched on.<br>- Check AC drive and motor rating<br>- Clean fans<br>- Check / reduce | |
| Over curr F | Motor current exceeds the peak AC drive current:<br>- Too short acceleration time.<br>- Too high motor load<br>- Excessive load change<br>- Soft short-circuit between phases or phase to earth<br>- Poor or loose motor cable connections<br>- Too high IxR Compensation level | - Check the acceleration time settings and make them longer if necessary.<br>- Check the motor load.<br>- Check on bad motor cable connections<br>- Check on bad earth cable connection<br>- Check on water or moisture in the motor housing and cable connections.<br>- Lower the level of IxR Compensation [352] | |
| Over volt D(eceleration) | Too high DC Link voltage:<br>- Too short deceleration time with respect to motor/machine inertia.<br>- Too small brake resistor malfunctioning Brake chopper | - Check the deceleration time settings and make them longer if necessary.<br>- Check the dimensions of the brake resistor and the functionality of the Brake chopper (if used) | |
| Over volt G(eneration) | | | |
| Over volt (Mains) | Too high DC Link voltage, due to too high mains voltage | - Check the main supply voltage<br>- Try to take away the interference cause or use other main supply lines. | |
| O(ver) volt M(ains) cut | | | |
| Over speed | Motor speed measurement exceeds maximum level. 110% of max speed (all parameter sets). | - Check encoder cables, wiring and setup<br>- Check motor data setup [22x]<br>- Perform short ID-run | |
| Under voltage | Too low DC Link voltage:<br>- Too low or no supply voltage<br>- Mains voltage dip due to starting other major power consuming machines on the same line. | - Make sure all three phases are properly connected and that the terminal screws are tightened.<br>- Check that the mains supply voltage is within the limits of the AC drive.<br>- Try to use other mains supply lines if dip is caused by other machinery<br>- Use the function low voltage override [421] | |

| | | | |
|---|---|---|---|
| LC Level | Low liquid cooling level in external reservoir.<br>External input (DigIn 1-8) active:<br>- active low function on the input.<br>NOTE: Only valid for AC drive types with Liquid Cooling option. | - Check liquid cooling<br>- Check the equipment and wiring that initiates the external input<br>- Check the programming of the digital inputs DigIn 1-8 | |
| OPTION | If an Option specific trip occurs | Check the description of the specific option | |
| Desat | Failure in output stage,<br>- desaturation of IGBTs<br>- Hard short circuit between phases or phase to earth<br>- Earth fault<br>- For size B - D also the Brake IGBT | - Check on bad motor cable connections<br>- Check on bad earth cable connections<br>- Check on water and moisture in the motor housing and cable connections<br>- Check that the rating plate data of the motor is correctly entered.<br>- Check the brake resistor, brake IGBT and wiring.<br>- For size H and up, check the cables from the PEBBs to the motor, that | 002 - 105 |
| Desat U+ * | | | 090 & Up |
| Desat U- * | | | |
| Desat V+ * | | | |
| Desat V- * | | | |
| Desat W+ * | | | |
| Desat W- * | | | |
| Desat BCC * | | | |
| DC link error | DC link voltage ripple exceeds maximum level | - Make sure all three phases are properly connected and that the terminal screws are tightened.<br>- Check that the mains supply voltage is within the limits of the AC drive.<br>- Try to use other mains supply lines if dip is caused by other machinery. | |
| Power Fault | One of the PF (Power Fault) trips below has occurred, but could not be determined. | - Check the PF errors and try to determine the cause. The trip history can be helpful. | |
| PF Fan Err * | Error in fan module | - Check for clogged air inlet filters in panel door and blocking material in fan module. | 090 & Up |
| PF HCB Err* | Error in controlled rectifier module (HCB) | - Check mains supply voltage | 060 & Up |
| PF Curr Err | Error in current balancing:<br>- between different modules.<br>- between two phases within one module. | - Check motor.<br>- Check fuses and line connections<br>- Check the individual motor current leads with an clamp on amp meter. | 430 & Up |
| PF Overvolt | Error in voltage balancing, overvoltage detected in one of the power modules (PEBB) | - Check motor.<br>- Check fuses and line connections. | 430 & Up |
| PF Comm Err * | Internal communication error | Contact service | |
| PF Int Temp * | Internal temperature too high | Check internal fans | |
| PF Temp Err * | Malfunction in temperature sensor | Contact service | |
| PF DC Err * | DC-link error and mains supply fault | - Check mains supply voltage<br>- Check fuses and line connections. | 060 & Up |
| PF Sup Err * | Mains supply fault | - Check mains supply voltage<br>- Check fuses and line connections. | |
| PF PBuC* | Powerboard micro controller reset by watchdog. | | |
| Brake | Brake tripped on brake fault (not released) or Brake not engaged during stop. | - Check Brake acknowledge signal wiring to selected digital input.<br>- Check programming of digital input DigIn 1-8, [520].<br>- Check circuit breaker feeding mechanical brake circuit.<br>- Check mechanical brake if acknowledge signal is wired from brake limit switch.<br>- Check brake contactor.<br>- Check settings [33C], [33D], [33E], [33F]. | |
| AnIn<Offset | An analogue input signal is below 75% of the configured minimum value. | - Check cables and connections of the analogue inputs.<br>- Check the configured minimum values for the analogue inputs.<br>- Disable AI Flt Mode in menu [51D]. | |
| MaxPumpClean | Too many cleaning attempts.<br>Pump not cleaned. | Change setting in menu [392E]. Manual cleaning of pump. | |
| TL Trip | Torque limited for too long. Both user configurable limitations and protective functions can limit the torque. | Change setting in menu [357]. Check warnings and indications before a trip to determine what causes the torque limitation. It can be a user setting such as [351] and [355] or a protective function. | |

# 11.2.2 Motor Data [220]

## Motor PWM [22E]

### Sinus Filter [22E2]

Parameters for sine filter.

#### PWM Mode [22E21]

| 22E21 | | PWM Mode |
|---|---|---|
| Default: | | Standard |
| Standard | 0 | Standard |
| Sine Filt | 1 | Sine Filter mode for use with output Sine Filters |

#### Inductor L1 [22E22]

Sine filter inductance. Compensation applied when sine filter selected as PWM mode in [22E21].

| 22E22 | Inductor L1 |
|---|---|
| Default | 0µH |
| Range | 0-65535µH |

#### Capacitor [22E23]

Sine filter capacitance. Compensation applied when sine filter selected as PWM mode in [22E21].

| 22E23 | Capacitor C1 |
|---|---|
| Default | 0µF |
| Range | 0-65535µF |

## Motor protection [253]

### Torque Limitation Trip [253E]

Delay time starts counting when the fault disappears.
After the time delay elapses, the alarm will reset if the function is active.

| 253E | TL Trip |
|---|---|
| Default | Off |
| Range | Off, 1-3600s (Off=0) |

### Torque Limitation Trip Type [253F]

Select the preferred way to react to an alarm trip.

| 253F | | TL Trip TT |
|---|---|---|
| Default | | Trip |
| Trip | 0 | The motor will coast |
| Deceleration | 1 | The motor will decelerate |

## 11.2.6 Serial Communication [260]

### Process Data Mode [2632]

Enter the mode of process data (cyclic data). For further information, see the Fieldbus option manual.

**NOTE: For CANopen module this menu is forced to "Basic".**

### Additional Process Values [2634]

Define the number of additional process values sent in cyclic messages.

**NOTE: For CANopen module this menu is forced to "8".**

## 11.3.2 Process Settings [320]

## Process Source [321]

| 321 | | Proc Source |
|---|---|---|
| Default | | Speed |
| F(Anin) | 0 | Function of analogue input. E.g. via PID control, [380]. |
| Speed | 1 | Speed as process reference[1]. |
| Torque | | Torque as process reference[2]. |
| PT100 | | Temperature as process reference. |
| F(Speed) | | Function of speed |
| F(Torque) | | Function of torque[2] |
| F(Bus) | | Function of communication reference |
| Frequency | | Frequency as process reference[1]. |
| Power | | Power as process reference[2] |

[1]. Only when Drive mode [213] is set to Speed or V/Hz.
[2]. Only when Drive mode [213] is set to Torque.

## 11.3.3 Start/Stop settings [330]

## DC Hold [33J]

This function enables applying a DC voltage to the motor at zero speed. This provides a (low) holding torque.
This function is available only in non-torque drive modes.

## 11.3.6 Torques [350]

### Torque Limitation Trip Time [357]

Enables and sets the time for a torque limitation trip. Both user-configurable limitations (e.g. max torque and max power) and protective functions (e.g. voltage limitation) can limit the torque. Torque drive modes disable this function.

| 357 | TL Trip |
|---|---|
| Default | Off |
| Range | Off, 1-6553.5s (Off=0) |

## 11.4.2 Process Protection [420]

Submenu with settings regarding protection functions for the AC drive and the motor.

## Low Voltage Override [421]

The motor is stopped by default when the mains supply dips. LVO control and LVO sleep try to override a stop at low voltage.

## Low Voltage Override Control [4211]

If a dip in the mains supply occurs and the low-voltage override control function is enabled, the AC drive will automatically decrease the motor speed to keep control of the application and prevent an under-voltage trip until the input voltage rises again. Therefore, the rotating energy in the motor/load is used to keep the DC link voltage level at the override level, for as long as possible or until the motor comes to a standstill. This is dependent on the inertia of the motor/load combination and the load of the motor at the time the dip occurs, see fig. 135.

| 4211 | | LVO Control |
|---|---|---|
| Default | | On |
| Off | 0 | At a voltage dip, the low-voltage trip will protect. |
| On | 1 | At mains dip, the AC drive ramps down until the voltage rises. |

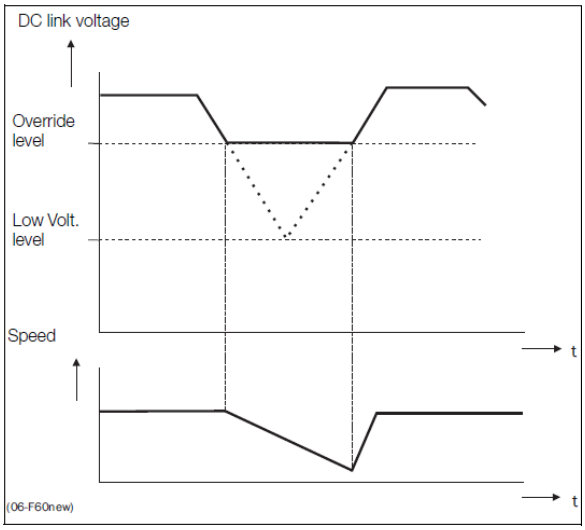


*Fig. 135 Low-voltage override control*

**NOTE: During the low voltage override the LED trip/limit blinks.**

**NOTE: LVO control and OVC are not active in torque mode.**

## Low Voltage Override Sleep Time [4212]

LVO sleep mode disables the low voltage trip and preserves the run command. This means that the motor will restart automatically, after a power dip, if the voltage returns within the set time. Detection of low voltage, provided that LVO control has become inactive (standstill or not enabled), enables the LVO sleep mode.

| 4212 | LVO Sleep Time |
|---|---|
| Default | Off |
| Off | Off, 1-30s (Off=0). |

**Note: The motor will coast as soon as the inverter enters LVO sleep mode. We therefore recommend activating spin start [33A] if LVO control [4211] is disabled.**

## 11.5.1 Analogue Inputs [510]

Submenu with all settings for the analogue inputs

### Analog Input Resolution [51E]

Sets the number of decimals used for analog inputs.

### Analog Input Resolution on the Control Panel [51E1]

Set the number of decimals presented by the control panel.

| 51E1 | | CP ANIN Resolution |
|---|---|---|
| Default | | 1% |
| 1% | 0 | No decimals |
| 0.1% | 1 | One decimal |
| 0.01% | 2 | Two decimals |

### Analog Input Resolution in Communication [51E2]

Set the number of decimals used by the communication interface.

| 51E2 | | COM ANIN Resolution |
|---|---|---|
| Default | | 1% |
| 1% | 0 | No decimals |
| 0.1% | 1 | One decimal |
| 0.01% | 2 | Two decimals |

**NOTE: The EINT format limits the number of significant digits to three.**

## 11.5.3 Analogue Outputs [530]

### Analog Output Resolution [537]

Sets the number of decimals used for analog outputs.

### Analog Output Resolution on the Control Panel [5371]

Set the number of decimals presented by the control panel

| 5371 | | CP ANOUT Resolution |
|---|---|---|
| Default | | 1% |
| 1% | 0 | No decimals |
| 0.1% | 1 | One decimal |
| 0.01% | 2 | Two decimals |

### Analog Output Resolution in Communication [5372]

Set the number of decimals presented by the control panel.

| 5372 | | COM ANOUT Resolution |
|---|---|---|
| Default | | 1% |
| 1% | 0 | No decimals |
| 0.1% | 1 | One decimal |
| 0.01% | 2 | Two decimals |

**NOTE: The EINT format limits the number of significant digits to three.**

## 11.5.4 Digital Outputs [540]

Submenu with all the settings for the digital outputs.

### Digital Out 1 [541]

Sets the function for the digital output 1.

| 541 | | DigOut 1 |
|---|---|---|
| Default | | Ready |
| Off | 0 | Output is not active and constantly low. |
| On | 1 | Output is made constantly high, i.e. for checking circuits and trouble shooting. |
| Run | 2 | Running. The AC drive output is active = produces current for the motor. |
| Stop | 3 | The AC drive output is not active. |
| … | … | … |
| Option 1 | 111 | Usage configurable by option software. |
| Option 2 | 112 | Usage configurable by option software. |
| Option 3 | 113 | Usage configurable by option software. |
| PumpClAct | 114 | Pump cleaning is active. |
| PumpClReq | 115 | Pump cleaning has been requested, but is not yet active. |
| B1 DigIn 1 | 116 | Digital input 1 on I/O board #1 (option) |
| B1 DigIn 2 | 117 | Digital input 2 on I/O board #1 (option) |
| B1 DigIn 3 | 118 | Digital input 3 on I/O board #1 (option) |
| B2 DigIn 1 | 119 | Digital input 1 on I/O board #2 (option) |
| B2 DigIn 2 | 120 | Digital input 2 on I/O board #2 (option) |
| B2 DigIn 3 | 121 | Digital input 3 on I/O board #2 (option) |
| B3 DigIn 1 | 122 | Digital input 1 on I/O board #3 (option) |
| B3 DigIn 2 | 123 | Digital input 2 on I/O board #3 (option) |
| B3 DigIn 3 | 124 | Digital input 3 on I/O board #3 (option) |
| LVo Sleep | 125 | LVO sleep mode. Inverter is ready to apply power to the motor as soon as the supply voltage returns. |

## 11.7.2 Status [720]

### Warning [722]

| Communication integer value | Warning message |
|---|---|
| 0 | No Error |
| 1 | Motor $I^2t$ |
| 2 | PTC |
| 3 | Motor lost |
| 4 | Locked rotor |
| 5 | ExtTrip1* |
| … | … |
| … | … |
| 31 | Encoder |
| 32 | ExtTrip2* |
| 33 | AnIn<Offset |
| 34 | ExtTrip3* |
| 35 | ExtTrip4* |
| 36 | MaxPumpClean |
| 37 | Option 2 |
| 38 | SlaveCB |
| 39 | TL Trip |

## 15. Menu List

| VFX,FDU 2.1 V5.14 Parameters | | VFX,FDU VFX only Default settings |
|---|---|---|
| 100 | StartWindow | |
| 110 | 1st Line | Process Val |
| 120 | 2nd Line | Torque,Current |
| 130 | 3rd Line | Current,Frequency |
| 140 | 4th Line | VSD Status |
| 150 | 5th Line | DC Voltage |
| 160 | 6th Line | IGBT Temp |
| 170 | View mode | Normal 100 |
| 200 | Main Setup | |
| 210 | Operation | |
| 211 | Language | English |
| 212 | Select Motor | M1 |
| 213 | Drive Mode | Speed,V/Hz |
| 214 | Ref Control | Remote |
| 215 | Run/Stp Ctrl | Remote |
| 216 | Reset Ctrl | Remote+Keyb |
| 217 | Local/Remote | |
| 2171 | LocRefCtrl | Standard |
| 2172 | LocRunCtrl | Standard |
| 218 | Lock Code? | 0 |
| 219 | Rotation | R+L |
| 21A | Level/Edge | Level |
| 21B | Supply Volts | Standard |
| 21C | Supply Type | AC Supply |
| 21D | Fire Mode | Off |
| 21E | CP Units | |
| 21E1 | CP Unit Torq | Nm |
| 21E2 | CP Unit Pow | W |
| 21E3 | CP Unit Temp | °C |
| 220 | Motor Data | |
| 221 | Motor Volts | [Motor] V |
| 222 | Motor Freq | 50Hz |
| 223 | Motor Power | [Motor] W |
| 224 | Motor Curr | [Motor] A |
| 225 | Motor Speed | [Motor] rpm |
| 226 | Motor Poles | [Motor] |
| 227 | Motor Cosφ | [Motor] |
| 228 | Motor Vent | Self |
| 229 | Motor ID-Run | Off |
| 22A | Motor Sound | F |
| 22B | Encoder | Off |
| 22C | Enc Pulses | 1024 |
| 22D | Enc Speed | 0rpm |
| 22E | Motor PWM | |
| 22E1 | PWM Fswitch | 3000Hz |
| 22E2 | Sine Filter | |
| 22E21 | PWM Mode | Standard |
| 22E22 | Inductor L1 | 0uH |
| 22E23 | Capacitor C1 | 0uF |
| 22E3 | PWM Random | 0 |
| 22E4 | Udc filter | 0 |
| 22F | Enc Puls Ctr | 0 |
| 22G | Enc Fault | |
| 22G1 | Enc F Delay | Off |
| 22G2 | Enc F Band | 10% |
| 22G3 | Max EncFCtr | 0s |
| 22G4 | EncOverrule | 0 |
| 22H | Phase Order | Normal |
| 22I | Motor Type | Async |
| 22J | Extend Data | |
| 22J1 | BEMF | [Motor] V |
| 22J2 | Rs (mΩ/ph) | [Motor] |
| 22J3 | Lsd (mH/ph) | [Motor] |
| 22J4 | Lsq (mH/ph) | [Motor] |

| | | |
|---|---|---|
| 230 | Mot Protect | |
| 231 | Mot I²t Type | Trip |
| 232 | Mot I²t Curr | 100% |
| 233 | Mot I²t Time | 60s |
| 234 | Thermal Prot | Off |
| 235 | Motor Class | F 140°C |
| 236 | PT100 Inputs | PT100 1+2+3 |
| 237 | Motor PTC | 0 |
| 238 | I²t Min Spd | 0rpm |
| 240 | Set Handling | |
| 241 | Select Set | A |
| 242 | Copy Set | A>B |
| 243 | Default>Set | A |
| 244 | Copy to CP | No Copy |
| 245 | Load from CP | No Copy |
| 246 | ComFlt Set | Keep Last |
| 247 | AnInFlt Set | Keep Last |
| 250 | Autoreset | |
| 251 | Autores Ctrl | |
| 2511 | No of Trips | 0 |
| 2512 | Autores Enb | DigIn |
| 252 | DriveProtect | |
| 2521 | Over temp | Off |
| 2522 | Over volt D | Off |
| 2523 | Over volt G | Off |
| 2524 | Over volt | Off |
| 2525 | Undervoltage | Off |
| 2526 | Over curr F | Off |
| 2527 | Power fault | Off |
| 2528 | LC Level | Off |
| 2529 | LC Level TT | Trip |
| 253 | MotorProtect | |
| 2531 | Motor Lost | Off |
| 2532 | Locked Rotor | Off |
| 2533 | Motor I²t | Off |
| 2534 | Motor I²t TT | Trip |
| 2535 | PT100 | Off |
| 2536 | PT100 TT | Trip |
| 2537 | PTC | Off |
| 2538 | PTC TT | Trip |
| 2539 | Over speed | Off |
| 253A | Ext Mot Temp | Off |
| 253B | Ext Mot TT | Trip |
| 253C | Brk Fault | Off |
| 253D | Encoder | Off |
| 253E | TL Trip | Off |
| 253F | TL Trip TT | Trip |
| 254 | Comm & I/O | |
| 2541 | Com Error | Off |
| 2542 | Com Error TT | Trip |
| 2543 | AnIn<Offset | Off |
| 2544 | AnIn TT | Trip |
| 255 | Load monitor | |
| 2551 | Min Alarm | Off |
| 2552 | Min Alarm TT | Trip |
| 2553 | Max Alarm | Off |
| 2554 | Max Alarm TT | Trip |
| 256 | Pump | |
| 2561 | Pump | Off |
| 257 | Crane | |
| 2571 | Crane Deviat | Off |
| 2572 | Crane Comm | Off |
| 258 | External | |
| 2581 | Ext Trip 1 | Off |
| 2582 | ExtTrip1 TT | Trip |
| 2583 | Ext Trip 2 | Off |
| 2584 | ExtTrip2 TT | Trip |

| | | |
|---|---|---|
| 2585 | Ext Trip 3 | Off |
| 2586 | ExtTrip3 TT | Trip |
| 2587 | Ext Trip 4 | Off |
| 2588 | ExtTrip4 TT | Trip |
| 260 | Serial Com | |
| 261 | Com Type | RS232/485 |
| 262 | RS232/485 | |
| 2621 | Baudrate | 9600 |
| 2622 | Address | 1 |
| 263 | Fieldbus | |
| 2631 | Address | 62 |
| 2632 | PrData Mode | Basic |
| 2633 | Read/Write | RW |
| 2634 | AddPrValues | 0 |
| 2635 | CAN Baudrate | 8 |
| 264 | Com Fault | |
| 2641 | ComFlt Mode | Off |
| 2642 | ComFlt Time | 0.5s |
| 2643 | 485Flt Mode | Off |
| 2644 | 485Flt Time | 0.5s |
| 2645 | KbdComFMode | Trip |
| 2646 | KbdComFTime | 2s |
| 2647 | CPportFMode | Trip |
| 2648 | CPportFTime | 10s |
| 265 | Ethernet | |
| 2651 | IP Address | 0.0.0.0 |
| 2652 | MAC Address | 000000000000 |
| 2653 | Subnet Mask | 0.0.0.0 |
| 2654 | Gateway | 0.0.0.0 |
| 2655 | DHCP | Off |
| 2656 | FTP Server | Off |
| 2657 | WEB Server | Off |
| 266 | FB Signal | |
| 2661 | FB S1/Wr1 | 0 |
| 2662 | FB S2/Wr2 | 0 |
| 2663 | FB S3/Wr3 | 0 |
| 2664 | FB S4/Wr4 | 0 |
| 2665 | FB S5/Wr5 | 0 |
| 2666 | FB S6/Wr6 | 0 |
| 2667 | FB S7/Wr7 | 0 |
| 2668 | FB S8/Wr8 | 0 |
| 2669 | FB S9/Rd1 | 0 |
| 266A | FB S10/Rd2 | 0 |
| 266B | FB S11/Rd3 | 0 |
| 266C | FB S12/Rd4 | 0 |
| 266D | FB S13/Rd5 | 0 |
| 266E | FB S14/Rd6 | 0 |
| 266F | FB S15/Rd7 | 0 |
| 266G | FB S16/Rd8 | 0 |
| 269 | FB Status | |
| 2691 | Board Type | |
| 2692 | SUP-bit | |
| 2693 | State FB | |
| 2694 | Serial Number | |
| 2694 | Serial Number | |
| 2695 | Firmware Version | |
| 2696 | CRC errors | |
| 2697 | MSG errors | |
| 2698 | TOUT ctr | |
| 2699 | FB Input | |
| 269A | FB Output | |
| 269B | Last instno | |
| 270 | Wireless | |
| 271 | WirelessMode | Off |
| 272 | WiFi Options | |
| 2721 | WiFi Mode | AccessPoint |
| 2722 | Channel | 5 |
| 2723 | Encryption | WPA-2 |
| 2724 | DHCP | Static |
| 2725 | SSID | 0 |

| | | |
|---|---|---|
| 2726 | Password | 0 |
| 2727 | IP Address | 192.168.1.1 |
| 2728 | Subnet Mask | 255.255.255.0 |
| 2729 | Gateway | 192.168.1.1 |
| 272A | WiFi Status | |
| 273 | BLE Options | |
| 2731 | BluetoothID | 0 |
| 2732 | Pairing Key | 6 |
| 274 | Security | |
| 2741 | Sec. Mode | Open |
| 2742 | Password | 0 |
| 300 | Process | |
| 310 | Set/View ref | 0 |
| 320 | Proc Setting | |
| 321 | Proc Source | Speed |
| 322 | Proc Unit | Off |
| 323 | User Unit | 0 |
| 324 | Process Min | 0 |
| 325 | Process Max | 0 |
| 326 | Ratio | Linear |
| 327 | F(Val) PrMin | Min |
| 328 | F(Val) PrMax | Max |
| 330 | Start/Stop | |
| 331 | Acc Time | 10s |
| 332 | Dec Time | 10s |
| 333 | Acc MotPot | 16s |
| 334 | Dec MotPot | 16s |
| 335 | Acc<Min Spd | 10s |
| 336 | Dec<Min Spd | 10s |
| 337 | Acc Ramp | Linear |
| 338 | Dec Ramp | Linear |
| 339 | Start Mode | Normal DC,Fast |
| 33A | Spinstart | Off |
| 33B | Stop Mode | Decel |
| 33C | Brk Release | 0s |
| 33D | Release Spd | 0rpm |
| 33E | Brk Engage | 0s |
| 33F | Brk Wait | 0s |
| 33G | Vector Brake | Off |
| 33H | Brk Fault | 1s |
| 33I | Release Trq | 0% |
| 33J | DC Hold | |
| 33J1 | DC Hold | Off |
| 33J2 | DC Hold Spd | 10rpm |
| 33J3 | DC Hold Cur | 30% |
| 33K | Start Vector | Normal (U) |
| 340 | Speed | |
| 341 | Min Speed | 0rpm |
| 342 | Stp<MinSpd | Off |
| 343 | Max Speed | Sync Speed |
| 344 | SkipSpd 1 Lo | 0rpm |
| 345 | SkipSpd 1 Hi | 0rpm |
| 346 | SkipSpd 2 Lo | 0rpm |
| 347 | SkipSpd 2 Hi | 0rpm |
| 348 | Jog Speed | 50rpm |
| 349 | Droop Speed | 0% |
| 34A | OverSpdTrip | 110% |
| 350 | Torques | |
| 351 | Max Torque | 120% |
| 352 | IxR Comp | Off |
| 353 | IxR CompUsr | 0% |
| 354 | Flux optim | Off |
| 355 | Max Power | Off |
| 356 | Torque Ramp | Off |
| 357 | TL Trip | Off |
| 360 | Preset Ref | |
| 361 | Motor Pot | Non volatile |
| 362 | Preset Ref 1 | 0 |
| 363 | Preset Ref 2 | 250 |
| 364 | Preset Ref 3 | 500 |

| | | |
|---|---|---|
| 365 | Preset Ref 4 | 750 |
| 366 | Preset Ref 5 | 1000 |
| 367 | Preset Ref 6 | 1250 |
| 368 | Preset Ref 7 | 1500 |
| 369 | Key Ref Mode | MotPot |
| 370 | Spd Ctrl PI | |
| 371 | Spd PI Auto | Off |
| 372 | Spd P Gain | 5 |
| 373 | Spd I Time | 0.11s |
| 380 | ProcCtrl PID | |
| 381 | PID Control | Off |
| 383 | PID P Gain | 1 |
| 384 | PID I Time | 1s |
| 385 | PID D Time | 0s |
| 386 | PID<MinSpd | Off |
| 387 | PID Act Marg | 0 |
| 388 | PID Stdy Tst | Off |
| 389 | PID Stdy Mar | 0 |
| 390 | EmoDedicPump | |
| 391 | Pump/Fan Ctl | |
| 3911 | Pump enable | Off |
| 3912 | No of Drives | 2 |
| 3913 | Select Drive | Sequence |
| 3914 | Change Cond | Both |
| 3915 | Change Timer | 50h |
| 3916 | Drives on Ch | 0 |
| 3917 | Upper Band | 10% |
| 3918 | Lower Band | 10% |
| 3919 | Start Delay | 0s |
| 391A | Stop Delay | 0s |
| 391B | Upp Band Lim | 0% |
| 391C | Low Band Lim | 0% |
| 391D | Settle Start | 0s |
| 391E | TransS Start | 60% |
| 391F | Settle Stop | 0s |
| 391G | TransS Stop | 60% |
| 391H | Run Time 1 | |
| 391H1 | Rst Run Tm1 | No |
| 391I | Run Time 2 | |
| 391I1 | Rst Run Tm2 | No |
| 391J | Run Time 3 | |
| 391J1 | Rst Run Tm3 | No |
| 391K | Run Time 4 | |
| 391K1 | Rst Run Tm4 | No |
| 391L | Run Time 5 | |
| 391L1 | Rst Run Tm5 | No |
| 391M | Run Time 6 | |
| 391M1 | Rst Run Tm6 | No |
| 391N | Pump 123456 | |
| 391P | No of Backup | 0 |
| 391Q | MastChNoRamp | Off |
| 392 | PumpCleaning | |
| 3921 | PC Enable | Off |
| 3922 | PC Allow | On |
| 392A | PC Trigger | |
| 392A1 | Force | Off |
| 392A2 | EachStart | Off |
| 392A3 | LoadMonMarg | Off |
| 392A4 | LMTrigDelay | 0.1s |
| 392A5 | RunTime | Off |
| 392A6 | Interval | Off |
| 392A7 | Weekday | 0 |
| 392A8 | StartTime | 00:00:00 |
| 392A9 | StartDate | 2000-00-00 |
| 392B | PC Phase 1 | |
| 392B1 | Ph1 Time | 10s |
| 392B2 | Ph1 RefSpd | -100% |
| 392B3 | Ph1 AccTime | Off |
| 392B4 | Ph1 DecTime | Off |
| 392C | PC Phase 2 | |

| | | |
|---|---|---|
| 392C1 | Ph2 Time | 10s |
| 392C2 | Ph2 RefSpd | 100% |
| 392C3 | Ph2 AccTime | Off |
| 392C4 | Ph2 DecTime | Off |
| 392D | PC Phase 3 | |
| 392D1 | Ph3 Time | Off |
| 392D2 | Ph3 RefSpd | 50% |
| 392D3 | Ph3 AccTime | Off |
| 392D4 | Ph3 DecTime | Off |
| 392E | PC MaxAttmpt | 8 |
| 392F | PC Status | |
| 392F1 | State | |
| 392F2 | AttmptCnt | |
| 392F3 | ResetCnt | No |
| 392F4 | TotCnt | |
| 392F5 | TotCntSince | |
| 392F6 | TotCntReset | No |
| 3A0 | Crane Option | |
| 3A1 | Crane enable | Off |
| 3A2 | Control | 4-speeds |
| 3A3 | Crane Relay1 | rpm |
| 3A4 | Crane Relay2 | s |
| 3A5 | PreLimSwSpd | 100rpm |
| 3A6 | CrawlSpd H/R | 150rpm |
| 3A7 | CrawlSpd L/L | 150rpm |
| 3A8 | Speed 2 | 600rpm |
| 3A9 | Speed 3 | 1000rpm |
| 3AA | Speed 4 | 1500rpm |
| 3AB | Dev Bandwidt | 100rpm |
| 3AC | Dev Time | 0.1s |
| 3AD | LAFS Load | Off |
| 3AE | Crane Inputs | |
| 3AF | CraneOutputs | |
| 3AG | Crane N Func | Zero pos |
| 400 | Monitor/Prot | |
| 410 | Load Monitor | |
| 411 | Alarm Select | Off |
| 412 | Alarm Trip | Off |
| 413 | Ramp Alarm | Off |
| 414 | Start Delay | 2s |
| 415 | Load Type | Load Constant |
| 416 | Max Alarm | |
| 4161 | MaxAlarmMar | 15% |
| 4162 | MaxAlarmDel | 0.1s |
| 417 | Max PreAlarm | |
| 4171 | MaxPreAlMar | 10% |
| 4172 | MaxPreAlDel | 0.1s |
| 418 | Min PreAlarm | |
| 4181 | MinPreAlMar | 10% |
| 4182 | MinPreAlDel | 0.1s |
| 419 | Min Alarm | |
| 4191 | MinAlarmMar | 15% |
| 4192 | MinAlarmDel | 0.1s |
| 41A | Autoset Alrm | No |
| 41B | Normal Load | 100% |
| 41C | Load Curve | |
| 41C1 | LoadCurve 1 | 100% |
| 41C2 | LoadCurve 2 | 100% |
| 41C3 | LoadCurve 3 | 100% |
| 41C4 | LoadCurve 4 | 100% |
| 41C5 | LoadCurve 5 | 100% |
| 41C6 | LoadCurve 6 | 100% |
| 41C7 | LoadCurve 7 | 100% |
| 41C8 | LoadCurve 8 | 100% |
| 41C9 | LoadCurve 9 | 100% |
| 41D | MinAbsMarg | 3% |
| 420 | Process Prot | |
| 421 | Low Volt Override | |
| 4211 | LVO Control | On |
| 4212 | LVO Sleep Time | Off |

| | | |
|---|---|---|
| 422 | Rotor Locked | Off |
| 423 | Motor Lost | Off |
| 424 | OverVolt Ctl | On |
| 430 | Trip Text | |
| 431 | ExtTrip1Text | 0 |
| 432 | ExtTrip2Text | 0 |
| 433 | ExtTrip3Text | 0 |
| 434 | ExtTrip4Text | 0 |
| 500 | I/Os | |
| 510 | An Inputs | |
| 511 | AnIn1 Fc | Process Ref |
| 512 | AnIn1 Setup | 4-20mA |
| 513 | AnIn1 Advan | |
| 5131 | AnIn1 Min | 4mA |
| 5132 | AnIn1 Max | 20mA |
| 5133 | AnIn1 Bipol | 20mA |
| 5134 | AnIn1 FcMin | Min |
| 5135 | AnIn1 VaMin | 0 |
| 5136 | AnIn1 FcMax | Max |
| 5137 | AnIn1 VaMax | 0 |
| 5138 | AnIn1 Oper | Add + |
| 5139 | AnIn1 Filt | 0.1s |
| 513A | AnIn1 Enabl | On |
| 514 | AnIn2 Fc | Off |
| 515 | AnIn2 Setup | 4-20mA |
| 516 | AnIn2 Advan | |
| 5161 | AnIn2 Min | 4mA |
| 5162 | AnIn2 Max | 20mA |
| 5163 | AnIn2 Bipol | 20mA |
| 5164 | AnIn2 FcMin | Min |
| 5165 | AnIn2 VaMin | 0 |
| 5166 | AnIn2 FcMax | Max |
| 5167 | AnIn2 VaMax | 0 |
| 5168 | AnIn2 Oper | Add + |
| 5169 | AnIn2 Filt | 0.1s |
| 516A | AnIn2 Enabl | On |
| 517 | AnIn3 Fc | Off |
| 518 | AnIn3 Setup | 4-20mA |
| 519 | AnIn3 Advan | |
| 5191 | AnIn3 Min | 4mA |
| 5192 | AnIn3 Max | 20mA |
| 5193 | AnIn3 Bipol | 20mA |
| 5194 | AnIn3 FcMin | Min |
| 5195 | AnIn3 VaMin | 0 |
| 5196 | AnIn3 FcMax | Max |
| 5197 | AnIn3 VaMax | 0 |
| 5198 | AnIn3 Oper | Add + |
| 5199 | AnIn3 Filt | 0.1s |
| 519A | AnIn3 Enabl | On |
| 51A | AnIn4 Fc | Off |
| 51B | AnIn4 Setup | 4-20mA |
| 51C | AnIn4 Advan | |
| 51C1 | AnIn4 Min | 4mA |
| 51C2 | AnIn4 Max | 20mA |
| 51C3 | AnIn4 Bipol | 20mA |
| 51C4 | AnIn4 FcMin | Min |
| 51C5 | AnIn4 VaMin | 0 |
| 51C6 | AnIn4 FcMax | Max |
| 51C7 | AnIn4 VaMax | 0 |
| 51C8 | AnIn4 Oper | Add + |
| 51C9 | AnIn4 Filt | 0.1s |
| 51CA | AnIn4 Enabl | On |
| 51D | AnIn Fault | |
| 51D1 | AnIn FltMode | Off |
| 51D2 | AnIn FltRef | 0% |
| 51D3 | AnIn Reset | No |
| 51E | ANIN Resolution | |
| 51E1 | CP ANIN Resolution | 1% |
| 51E2 | COM ANIN Resolution | 1% |
| 520 | Dig Inputs | |

| | | |
|---|---|---|
| 521 | DigIn 1 | RunL |
| 522 | DigIn 2 | RunR |
| 523 | DigIn 3 | Off |
| 524 | DigIn 4 | Off |
| 525 | DigIn 5 | Off |
| 526 | DigIn 6 | Off |
| 527 | DigIn 7 | Off |
| 528 | DigIn 8 | Reset |
| 529 | B1 DigIn 1 | Off |
| 52A | B1 DigIn 2 | Off |
| 52B | B1 DigIn 3 | Off |
| 52C | B2 DigIn 1 | Off |
| 52D | B2 DigIn 2 | Off |
| 52E | B2 DigIn 3 | Off |
| 52F | B3 DigIn 1 | Off |
| 52G | B3 DigIn 2 | Off |
| 52H | B3 DigIn 3 | Off |
| 530 | An Outputs | |
| 531 | AnOut1 Fc | Speed |
| 532 | AnOut1 Setup | 4-20mA |
| 533 | AnOut1 Advan | |
| 5331 | AnOut1 Min | 4mA |
| 5332 | AnOut1 Max | 20mA |
| 5333 | AnOut1Bipol | 20mA |
| 5334 | AnOut1FcMin | Min |
| 5335 | AnOut1VaMin | 0 |
| 5336 | AnOut1FcMax | Max |
| 5337 | AnOut1VaMax | 0 |
| 534 | AnOut2 Fc | Torque |
| 535 | AnOut2 Setup | 4-20mA |
| 536 | AnOut2 Advan | |
| 5361 | AnOut2 Min | 4mA |
| 5362 | AnOut2 Max | 20mA |
| 5363 | AnOut2Bipol | 20mA |
| 5364 | AnOut2FcMin | Min |
| 5365 | AnOut2VaMin | 0 |
| 5366 | AnOut2FcMax | Max |
| 5367 | AnOut2VaMax | 0 |
| 537 | ANOUT Resolution | |
| 5371 | CP ANOUT Resolution | 1% |
| 5372 | COM ANOUT Resolution | 1% |
| 540 | Dig Outputs | |
| 541 | DigOut 1 | Ready |
| 542 | DigOut 2 | Brake/No Trip |
| 550 | Relays | |
| 551 | Relay 1 | Trip |
| 552 | Relay 2 | Run |
| 553 | Relay 3 | Off |
| 554 | B1 Relay 1 | Off |
| 555 | B1 Relay 2 | Off |
| 556 | B1 Relay 3 | Off |
| 557 | B2 Relay 1 | Off |
| 558 | B2 Relay 2 | Off |
| 559 | B2 Relay 3 | Off |
| 55A | B3 Relay 1 | Off |
| 55B | B3 Relay 2 | Off |
| 55C | B3 Relay 3 | Off |
| 55D | Relay Advan | |
| 55D1 | Relay1 Mode | N.O |
| 55D2 | Relay2 Mode | N.O |
| 55D3 | Relay3 Mode | N.O |
| 55D4 | B1R1 Mode | N.O |
| 55D5 | B1R2 Mode | N.O |
| 55D6 | B1R3 Mode | N.O |
| 55D7 | B2R1 Mode | N.O |
| 55D8 | B2R2 Mode | N.O |
| 55D9 | B2R3 Mode | N.O |
| 55DA | B3R1 Mode | N.O |
| 55DB | B3R2 Mode | N.O |

| | | |
|---|---|---|
| 55DC | B3R3 Mode | N.O |
| 560 | Virtual I/Os | |
| 561 | VIO 1 Dest | Off |
| 562 | VIO 1 Source | Off |
| 563 | VIO 2 Dest | Off |
| 564 | VIO 2 Source | Off |
| 565 | VIO 3 Dest | Off |
| 566 | VIO 3 Source | Off |
| 567 | VIO 4 Dest | Off |
| 568 | VIO 4 Source | Off |
| 569 | VIO 5 Dest | Off |
| 56A | VIO 5 Source | Off |
| 56B | VIO 6 Dest | Off |
| 56C | VIO 6 Source | Off |
| 56D | VIO 7 Dest | Off |
| 56E | VIO 7 Source | Off |
| 56F | VIO 8 Dest | Off |
| 56G | VIO 8 Source | STO Active |
| 600 | Logic&Timers | |
| 610 | Comparators | |
| 611 | CA1 Setup | |
| 6111 | CA1 Value | Speed |
| 6112 | CA1 LevelHI | 300 |
| 6113 | CA1 LevelLO | 200 |
| 6114 | CA1 Type | Hysteresis |
| 6115 | CA1 Polar | Unipolar |
| 6116 | CA1 Set Dly | 0s |
| 6117 | CA1 Res Dly | 0s |
| 6118 | CA1 Tmr Val | 0s |
| 612 | CA2 Setup | |
| 6121 | CA2 Value | Torque |
| 6122 | CA2 LevelHI | 20 |
| 6123 | CA2 LevelLO | 10 |
| 6124 | CA2 Type | Hysteresis |
| 6125 | CA2 Polar | Unipolar |
| 6126 | CA2 Set Dly | 0s |
| 6127 | CA2 Res Dly | 0s |
| 6128 | CA2 Tmr Val | 0s |
| 613 | CA3 Setup | |
| 6131 | CA3 Value | Process Val |
| 6132 | CA3 LevelHI | 300 |
| 6133 | CA3 LevelLO | 200 |
| 6134 | CA3 Type | Hysteresis |
| 6135 | CA3 Polar | Unipolar |
| 6136 | CA3 Set Dly | 0s |
| 6137 | CA3 Res Dly | 0s |
| 6138 | CA3 Tmr Val | 0s |
| 614 | CA4 Setup | |
| 6141 | CA4 Value | Process Err |
| 6142 | CA4 LevelHI | 100 |
| 6143 | CA4 LevelLO | -100 |
| 6144 | CA4 Type | Window |
| 6145 | CA4 Polar | Bipolar |
| 6146 | CA4 Set Dly | 0s |
| 6147 | CA4 Res Dly | 0s |
| 6148 | CA4 Tmr Val | 0s |
| 620 | Analog Mux | |
| 621 | AnMux1 | |
| 6211 | AnMux1 InA | AnIn1 |
| 6212 | AnMux1 InB | AnIn2 |
| 6213 | AnMux1 Op | Off |
| 622 | AnMux2 | |
| 6221 | AnMux2 InA | AnIn1 |
| 6222 | AnMux2 InB | AnIn2 |
| 6223 | AnMux2 Op | Off |
| 630 | Not Gate | |
| 631 | NOT1 Input | CA2 |
| 632 | NOT2 Input | Off |
| 633 | NOT3 Input | Off |
| 634 | NOT4 Input | Off |

| | | |
|---|---|---|
| 635 | NOT5 Input | Off |
| 636 | NOT6 Input | Off |
| 637 | NOT7 Input | Off |
| 638 | NOT8 Input | Off |
| 640 | Logics | |
| 641 | Logic 1 | |
| 6411 | L1 Expr | ((1.2).3).4 |
| 6412 | L1 Input 1 | CA1 |
| 6413 | L1 Op 1 | & |
| 6414 | L1 Input 2 | NOT1 |
| 6415 | L1 Op 2 | & |
| 6416 | L1 Input 3 | Run |
| 6417 | L1 Op 3 | . |
| 6418 | L1 Input 4 | Off |
| 6419 | L1 Set Dly | 0s |
| 641A | L1 Res Dly | 0s |
| 641B | L1 Tmr Val | 0s |
| 642 | Logic 2 | |
| 6421 | L2 Expr | ((1.2).3).4 |
| 6422 | L2 Input 1 | CA1 |
| 6423 | L2 Op 1 | & |
| 6424 | L2 Input 2 | NOT1 |
| 6425 | L2 Op 2 | & |
| 6426 | L2 Input 3 | Run |
| 6427 | L2 Op 3 | . |
| 6428 | L2 Input 4 | Off |
| 6429 | L2 Set Dly | 0s |
| 642A | L2 Res Dly | 0s |
| 642B | L2 Tmr Val | 0s |
| 643 | Logic 3 | |
| 6431 | L3 Expr | ((1.2).3).4 |
| 6432 | L3 Input 1 | CA1 |
| 6433 | L3 Op 1 | & |
| 6434 | L3 Input 2 | NOT1 |
| 6435 | L3 Op 2 | & |
| 6436 | L3 Input 3 | Run |
| 6437 | L3 Op 3 | . |
| 6438 | L3 Input 4 | Off |
| 6439 | L3 Set Dly | 0s |
| 643A | L3 Res Dly | 0s |
| 643B | L3 Tmr Val | 0s |
| 644 | Logic 4 | |
| 6441 | L4 Expr | ((1.2).3).4 |
| 6442 | L4 Input 1 | CA1 |
| 6443 | L4 Op 1 | & |
| 6444 | L4 Input 2 | NOT1 |
| 6445 | L4 Op 2 | & |
| 6446 | L4 Input 3 | Run |
| 6447 | L4 Op 3 | . |
| 6448 | L4 Input 4 | Off |
| 6449 | L4 Set Dly | 0s |
| 644A | L4 Res Dly | 0s |
| 644B | L4 Tmr Val | 0s |
| 650 | Timers | |
| 651 | Timer 1 | |
| 6511 | Timer1 Trig | Off |
| 6512 | Timer1 Mode | Off |
| 6514 | Timer1 T1/D | 0s |
| 6515 | Timer1 T2 | 0s |
| 6516 | Timer1Value | 0s |
| 652 | Timer 2 | |
| 6521 | Timer2 Trig | Off |
| 6522 | Timer2 Mode | Off |
| 6524 | Timer2 T1/D | 0s |
| 6525 | Timer2 T2 | 0s |
| 6526 | Timer2Value | 0s |
| 653 | Timer 3 | |
| 6531 | Timer3 Trig | Off |
| 6532 | Timer3 Mode | Off |
| 6534 | Timer3 T1/D | 0s |

| | | |
|---|---|---|
| 6535 | Timer3 T2 | 0s |
| 6536 | Timer3Value | 0s |
| 654 | Timer 4 | |
| 6541 | Timer4 Trig | Off |
| 6542 | Timer4 Mode | Off |
| 6544 | Timer4 T1/D | 0s |
| 6545 | Timer4 T2 | 0s |
| 6546 | Timer4Value | 0s |
| 660 | Flip flops | |
| 661 | Flip flop 1 | |
| 6611 | F1 mode | Reset |
| 6612 | F1 set | Off |
| 6613 | F1 reset | Off |
| 6614 | F1 Set Dly | 0s |
| 6615 | F1 Res Dly | 0s |
| 6616 | F1 Tmr Val | 0s |
| 662 | Flip flop 2 | |
| 6621 | F2 mode | Reset |
| 6622 | F2 set | Off |
| 6623 | F2 reset | Off |
| 6624 | F2 Set Dly | 0s |
| 6625 | F2 Res Dly | 0s |
| 6626 | F2 Tmr Val | 0s |
| 663 | Flip flop 3 | |
| 6631 | F3 mode | Reset |
| 6632 | F3 set | Off |
| 6633 | F3 reset | Off |
| 6634 | F3 Set Dly | 0s |
| 6635 | F3 Res Dly | 0s |
| 6636 | F3 Tmr Val | 0s |
| 664 | Flip flop 4 | |
| 6641 | F4 mode | Reset |
| 6642 | F4 set | Off |
| 6643 | F4 reset | Off |
| 6644 | F4 Set Dly | 0s |
| 6645 | F4 Res Dly | 0s |
| 6646 | F4 Tmr Val | 0s |
| 670 | Counters | |
| 671 | Counter1 | |
| 6711 | C1 Trig | Off |
| 6712 | C1 Reset | Off |
| 6713 | C1 High Val | 0 |
| 6714 | C1 Low Val | 0 |
| 6715 | C1 DecTimer | Off |
| 6719 | C1 Value | 0 |
| 672 | Counter2 | |
| 6721 | C2 Trig | Off |
| 6722 | C2 Reset | Off |
| 6723 | C2 High Val | 0 |
| 6724 | C2 Low Val | 0 |
| 6725 | C2 DecTimer | Off |
| 6729 | C2 Value | 0 |
| 680 | Clock logic | |
| 681 | Clock 1 | |
| 6811 | Clk1TimeON | 00:00:00 |
| 6812 | Clk1TimeOff | 00:00:00 |
| 6813 | Clk1DateOn | 2000-00-00 |
| 6814 | Clk1DateOff | 2000-00-00 |
| 6815 | Clk1Weekday | 127 |
| 682 | Clock 2 | |
| 6821 | Clk2TimeON | 00:00:00 |
| 6822 | Clk2TimeOff | 00:00:00 |
| 6823 | Clk2DateOn | 2000-00-00 |
| 6824 | Clk2DateOff | 2000-00-00 |
| 6825 | Clk2Weekday | 127 |
| 700 | Oper/Status | |
| 710 | Operation | |
| 711 | Process Val | |
| 712 | Speed | |
| 713 | Torque | |

| | | |
|---|---|---|
| 714 | Shaft Power | |
| 715 | El Power | |
| 716 | Current | |
| 717 | Output volt | |
| 718 | Frequency | |
| 719 | DC Voltage | |
| 71A | IGBT Temp | |
| 71B | PT100 1,2,3 | |
| 71C | PT100 4,5,6 | |
| 720 | Status | |
| 721 | VSD Status | |
| 722 | Warning | |
| 723 | DigIn Status | |
| 724 | DigOutStatus | |
| 725 | AnIn 1 2 | |
| 726 | AnIn 3 4 | |
| 727 | AnOut1 2 | |
| 728 | IO Status B1 | |
| 729 | IO Status B2 | |
| 72A | IO Status B3 | |
| 72B | Area D Stat | |
| 72B1 | Area D LSB | |
| 72B2 | Area D MSB | |
| 72C | VIO Status | |
| 72D | Run Status | |
| 730 | Stored Val | |
| 731 | Run Time | |
| 7311 | Reset RunTm | No |
| 732 | Mains Time | |
| 733 | Energy | |
| 7331 | Rst Energy | No |
| 800 | View TripLog | |
| 810 | TripMessage | |
| 811 | Process Val | |
| 812 | Speed | |
| 813 | Torque | |
| 814 | Shaft Power | |
| 815 | El Power | |
| 816 | Current | |
| 817 | Output volt | |
| 818 | Frequency | |
| 819 | DC Voltage | |
| 81A | IGBT Temp | |
| 81B | PT100 1,2,3 | |
| 81C | VSD Status | |
| 81D | DigIn Status | |
| 81E | DigOutStatus | |
| 81F | AnIn 1 2 | |
| 81G | AnIn 3 4 | |
| 81H | AnOut1 2 | |
| 81I | IO Status B1 | |
| 81J | IO Status B2 | |
| 81K | IO Status B3 | |
| 81L | Run Time | |
| 81M | Mains Time | |
| 81N | Energy | |
| 81O | Set/View ref | |
| 81P | VIO Status | |
| 81Q | PT100 4,5,6 | |
| 81R | Clock | |
| 81R1 | Time | |
| 81R2 | Date | |
| 820 | TripMessage | |
| 821 | Process Val | |
| 822 | Speed | |
| 823 | Torque | |
| 824 | Shaft Power | |
| 825 | El Power | |
| 826 | Current | |
| 827 | Output volt | |

| | |
|---|---|
| 828 | Frequency |
| 829 | DC Voltage |
| 82A | IGBT Temp |
| 82B | PT100 1,2,3 |
| 82C | VSD Status |
| 82D | DigIn Status |
| 82E | DigOutStatus |
| 82F | AnIn 1 2 |
| 82G | AnIn 3 4 |
| 82H | AnOut1 2 |
| 82I | IO Status B1 |
| 82J | IO Status B2 |
| 82K | IO Status B3 |
| 82L | Run Time |
| 82M | Mains Time |
| 82N | Energy |
| 82O | Set/View ref |
| 82P | VIO Status |
| 82Q | PT100 4,5,6 |
| 82R | Clock |
| 82R1 | Time |
| 82R2 | Date |
| 830 | TripMessage |
| 831 | Process Val |
| 832 | Speed |
| 833 | Torque |
| 834 | Shaft Power |
| 835 | El Power |
| 836 | Current |
| 837 | Output volt |
| 838 | Frequency |
| 839 | DC Voltage |
| 83A | IGBT Temp |
| 83B | PT100 1,2,3 |
| 83C | VSD Status |
| 83D | DigIn Status |
| 83E | DigOutStatus |
| 83F | AnIn 1 2 |
| 83G | AnIn 3 4 |
| 83H | AnOut1 2 |
| 83I | IO Status B1 |
| 83J | IO Status B2 |
| 83K | IO Status B3 |
| 83L | Run Time |
| 83M | Mains Time |
| 83N | Energy |
| 83O | Set/View ref |
| 83P | VIO Status |
| 83Q | PT100 4,5,6 |
| 83R | Clock |
| 83R1 | Time |
| 83R2 | Date |
| 840 | TripMessage |
| 841 | Process Val |
| 842 | Speed |
| 843 | Torque |
| 844 | Shaft Power |
| 845 | El Power |
| 846 | Current |
| 847 | Output volt |
| 848 | Frequency |
| 849 | DC Voltage |
| 84A | IGBT Temp |
| 84B | PT100 1,2,3 |
| 84C | VSD Status |
| 84D | DigIn Status |
| 84E | DigOutStatus |
| 84F | AnIn 1 2 |
| 84G | AnIn 3 4 |
| 84H | AnOut1 2 |

| | |
|---|---|
| 84I | IO Status B1 |
| 84J | IO Status B2 |
| 84K | IO Status B3 |
| 84L | Run Time |
| 84M | Mains Time |
| 84N | Energy |
| 84O | Set/View ref |
| 84P | VIO Status |
| 84Q | PT100 4,5,6 |
| 84R | Clock |
| 84R1 | Time |
| 84R2 | Date |
| 850 | TripMessage |
| 851 | Process Val |
| 852 | Speed |
| 853 | Torque |
| 854 | Shaft Power |
| 855 | El Power |
| 856 | Current |
| 857 | Output volt |
| 858 | Frequency |
| 859 | DC Voltage |
| 85A | IGBT Temp |
| 85B | PT100 1,2,3 |
| 85C | VSD Status |
| 85D | DigIn Status |
| 85E | DigOutStatus |
| 85F | AnIn 1 2 |
| 85G | AnIn 3 4 |
| 85H | AnOut1 2 |
| 85I | IO Status B1 |
| 85J | IO Status B2 |
| 85K | IO Status B3 |
| 85L | Run Time |
| 85M | Mains Time |
| 85N | Energy |
| 85O | Set/View ref |
| 85P | VIO Status |
| 85Q | PT100 4,5,6 |
| 85R | Clock |
| 85R1 | Time |
| 85R2 | Date |
| 860 | TripMessage |
| 861 | Process Val |
| 862 | Speed |
| 863 | Torque |
| 864 | Shaft Power |
| 865 | El Power |
| 866 | Current |
| 867 | Output volt |
| 868 | Frequency |
| 869 | DC Voltage |
| 86A | IGBT Temp |
| 86B | PT100 1,2,3 |
| 86C | VSD Status |
| 86D | DigIn Status |
| 86E | DigOutStatus |
| 86F | AnIn 1 2 |
| 86G | AnIn 3 4 |
| 86H | AnOut1 2 |
| 86I | IO Status B1 |
| 86J | IO Status B2 |
| 86K | IO Status B3 |
| 86L | Run Time |
| 86M | Mains Time |
| 86N | Energy |
| 86O | Set/View ref |
| 86P | VIO Status |
| 86Q | PT100 4,5,6 |
| 86R | Clock |

| | | |
|---|---|---|
| 86R1 | Time | |
| 86R2 | Date | |
| 870 | TripMessage | |
| 871 | Process Val | |
| 872 | Speed | |
| 873 | Torque | |
| 874 | Shaft Power | |
| 875 | El Power | |
| 876 | Current | |
| 877 | Output volt | |
| 878 | Frequency | |
| 879 | DC Voltage | |
| 87A | IGBT Temp | |
| 87B | PT100 1,2,3 | |
| 87C | VSD Status | |
| 87D | DigIn Status | |
| 87E | DigOutStatus | |
| 87F | AnIn 1 2 | |
| 87G | AnIn 3 4 | |
| 87H | AnOut1 2 | |
| 87I | IO Status B1 | |
| 87J | IO Status B2 | |
| 87K | IO Status B3 | |
| 87L | Run Time | |
| 87M | Mains Time | |
| 87N | Energy | |
| 87O | Set/View ref | |
| 87P | VIO Status | |
| 87Q | PT100 4,5,6 | |
| 87R | Clock | |
| 87R1 | Time | |
| 87R2 | Date | |
| 880 | TripMessage | |
| 881 | Process Val | |
| 882 | Speed | |
| 883 | Torque | |
| 884 | Shaft Power | |
| 885 | El Power | |
| 886 | Current | |
| 887 | Output volt | |
| 888 | Frequency | |
| 889 | DC Voltage | |
| 88A | IGBT Temp | |
| 88B | PT100 1,2,3 | |
| 88C | VSD Status | |
| 88D | DigIn Status | |
| 88E | DigOutStatus | |
| 88F | AnIn 1 2 | |
| 88G | AnIn 3 4 | |
| 88H | AnOut1 2 | |
| 88I | IO Status B1 | |
| 88J | IO Status B2 | |
| 88K | IO Status B3 | |
| 88L | Run Time | |
| 88M | Mains Time | |
| 88N | Energy | |
| 88O | Set/View ref | |
| 88P | VIO Status | |
| 88Q | PT100 4,5,6 | |
| 88R | Clock | |
| 88R1 | Time | |
| 88R2 | Date | |
| 890 | TripMessage | |
| 891 | Process Val | |
| 892 | Speed | |
| 893 | Torque | |
| 894 | Shaft Power | |
| 895 | El Power | |
| 896 | Current | |
| 897 | Output volt | |

| | | |
|---|---|---|
| 898 | Frequency | |
| 899 | DC Voltage | |
| 89A | IGBT Temp | |
| 89B | PT100 1,2,3 | |
| 89C | VSD Status | |
| 89D | DigIn Status | |
| 89E | DigOutStatus | |
| 89F | AnIn 1 2 | |
| 89G | AnIn 3 4 | |
| 89H | AnOut1 2 | |
| 89I | IO Status B1 | |
| 89J | IO Status B2 | |
| 89K | IO Status B3 | |
| 89L | Run Time | |
| 89M | Mains Time | |
| 89N | Energy | |
| 89O | Set/View ref | |
| 89P | VIO Status | |
| 89Q | PT100 4,5,6 | |
| 89R | Clock | |
| 89R1 | Time | |
| 89R2 | Date | |
| 8A0 | Reset Trip L | No |
| 900 | System Data | |
| 920 | VSD Data | |
| 921 | VSD Type | |
| 922 | Software | |
| 9221 | Build Info | |
| 9222 | Build ID | |
| 9223 | EmoLib ID | |
| 9224 | SW Config | |
| 923 | Unit Name | 0 |
| 924 | Hardware | |
| 9241 | CB Key | |
| 9242 | Serial Nbr | 0 |
| 925 | CtrlPanel | |
| 9251 | CP SW ver | |
| 9252 | CP HW ver | |
| 9253 | CP Build ID | |
| 9254 | CP Key | |
| 930 | Clock | |
| 931 | Time | 00:00:00 |
| 932 | Date | 2000-00-00 |
| 933 | Weekday | Monday |