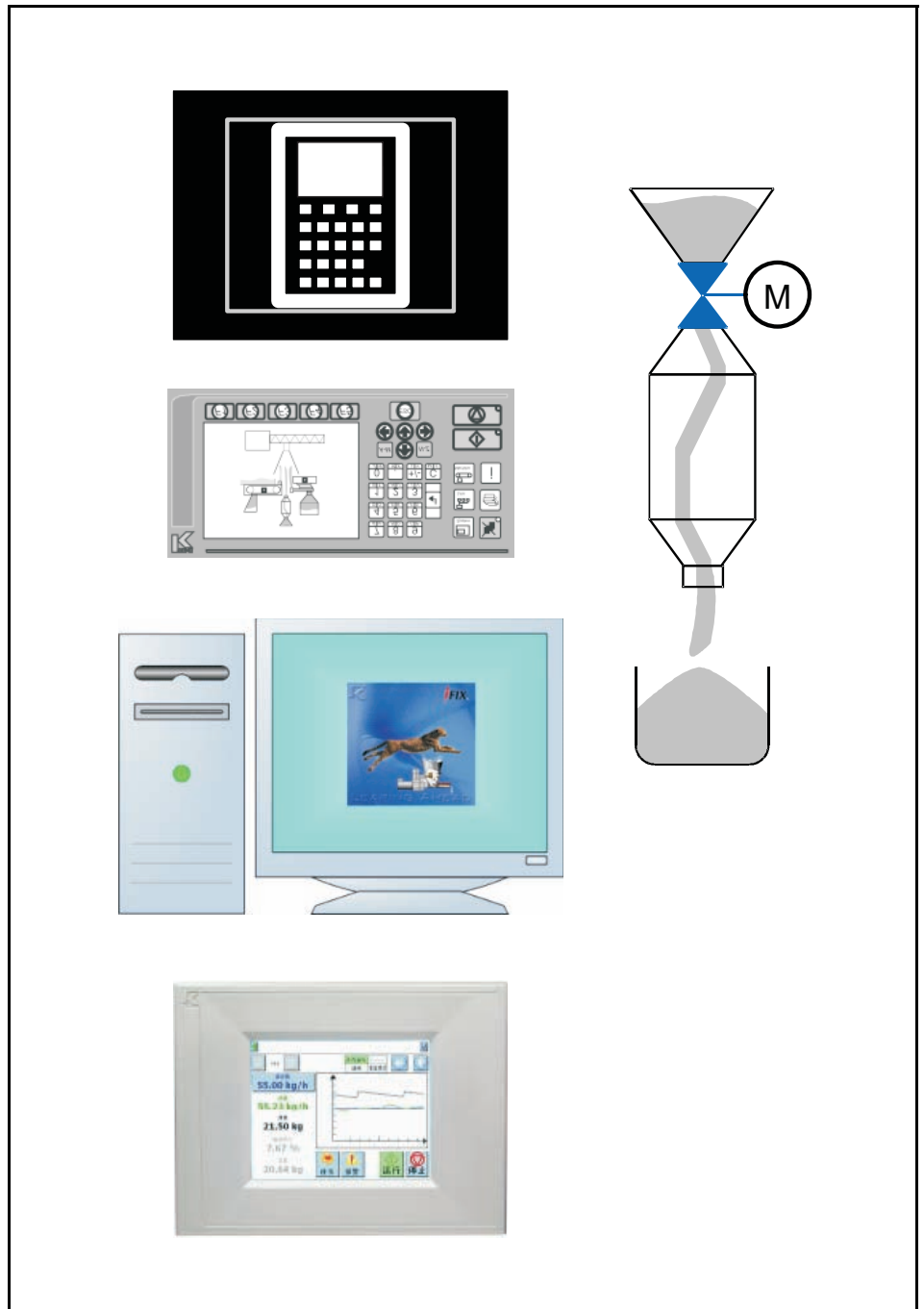# PROGRAMMING INSTRUCTIONS

KCM SFM Programming
Software Version 2.3

Read this document prior to operating the device.
This document contains all safety and warning notes.

Original operating instructions

0590020604-EN Rev. 1.4.1

Service

If you need assistance, please call your local service centre or

Before you call...

⇒ Do you have alarm displays? Are you able to eliminate the causes?

⇒ Have you modified part of the system, product or operating mode?

⇒ Have you tried to remedy the fault in accordance with the operating instructions?

⇒ Note the project or order number You will find these on the machine or in the system manual.

- Example: 0403214

Using the manual:

⇒ This arrow identifies an individual action.

1. Numbers identify a sequence of actions which have to be executed step-by-step.

▲ This symbol identifies a general safety note.

    Reference to another manual.

i   Important information.

    This symbol indicates that tools are required for the following task.

    Specifies where information or a situation must be checked.

If an error or ommission is found, please contact:
documentation@coperionktron.com

Table of Contents

1   Programming Reference

See operating manual for operator instruction with safety notes

The following programming instructions covers SFM application programming for the displays KSU-II/KCM, KSL, K-Vision, KSC.
This manual is only for skilled staff instructed by Coperion K-Tron (Switzerland) LLC.

The menu architecture for the application is the same for all displays. The main differences between the displays are the navigation and the short variable name for the KSU-II/KCM.

1.0.1   Additional programming information

See instructions below for information on the following points:

- User interface operation; keypad and display function
- For feeder calibration
- General operation
- Technical specifications

KSU-II operation with calibration procedures

KCM operation with calibration procedures

K-Vision operation with calibration procedures

KSC operation with calibration procedures

KSL operation with calibration procedures

Smart Connex II Overview

KCM General PC Utilities

KCM Electronics

1.0.2   Manual notation

The following is standard through out this manual.

- KSU-II / KCM Parameter name shown as <PARAM NAME>
- KSL / KSC Parameter name shown as <Param Name>
- Parameter value shown as <Param Value>
- Menu name as <Menu NAME>
- Alarm message as <Alarm Message>
- Display indication or key action result as <INDICATION>.
- Dialog box indication as <Dialog>.
- Key or button as **KEY**

The first parameter name (in CAPs) is for KSU-II/KCM display. The second parameter name below the first is for the KSL and KSC.

The **BOLD PARAMETERS** are command functions for the KSU-II/KCM. For KSL and KSC functions keys are used instead of command functions.

1.0.3 Abbreviations and terminology

- Config port = diagnostic serial data port from KCM
- CPU = central processing unit, microprocessor
- Drive-MDU = Common representation of all five types of drive pc boards (450 watt DC drive, 1600 watt DC drive, AC drive interface, stepper motor drive, vibratory drive)
- HCU = Hurricane pneumatic loader control
- Host Channel = serial data connection to remote host computer
- HSU = Hurricane pneumatic loader control programming interface
- HMI = human, machine interface, usually a PC utilizing a commercial SCADA software package
- Internal Channel = serial data connection to SFTs/HCU loader controls and internal motor drives
- KCM = Coperion K-Tron (Switzerland) LLC control module, the SmartConnex II integrated feeder controller
- KCM = KCM with local keypad and display
- KCM-SD = KCM with status display only
- kgr = host communication file residing in KCM
- KSC = Coperion K-Tron (Switzerland) LLC Smart Commander, a PC based HMI system for use with up to 30 controllers
- KSL = Coperion K-Tron (Switzerland) LLC line interface for up to 8 feeders
- K-Net = KCM serial data connection to KSU-II, KSL or KSC
- K-Port 1 and K-Port 2 = data ports for a Coperion K-Tron (Switzerland) LLC specific interface
- KSU-II = Coperion K-Tron (Switzerland) LLC single unit user interface for the KCM
- pcb = printed circuit board
- SCADA = supervisory, control and data acquisition system
- Smart Connex II = second version of SmartConnex architecture
- SFM = Smart Flow Meter
- SFT = Smart Force Transducer

1.0.4   Menu and sub-menu listing

- Product Change menu
- Calibration menu
- Alarm menu
  - Alarm limits sub-menu
  - Alarm setup sub-menu
- Tuning menu
- Scale menu
  - General sub-menu
  - SFT sub-menu
- Machine
  - General sub-menu
  - Machine sub-menu
  - Motor sub-menu
  - Service sub-menu
  - Performance sub-menu
- I-O Setup menu
  - Digital Input sub-menu
  - Digital Output sub-menu
  - Setpoint Input sub-menu
  - Analog Output sub-menu
  - Modbus I/O sub-menu
- Loader menu-hidden if HCU or LSR is connected
- HCU Loader menu-appears when HCU is connected to KCM
- LSR Loader menu-appears when LSR is connected to KCM
- System menu
  - Communications sub-menu
  - SW Versions sub-menu
  - Parameter Backup sub-menu
- Security menu

1.1 Product change menu

This menu allows easy product changeover.
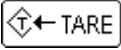
Parameter	Definition
AUTO RETARE **Auto Retare**	If switched <On>, the weighing units are continuously tared if no massflow is measured, when the weight is below the entered values for <Threshold Chute> and <Divert Channel>. If switched <Off>, the auto tare function is disabled. Selections: ON, OFF Default: OFF
AUTO TARE	The netweight is set to zero and the tare values for the Chute and Divert channel SFTs are stored in the parameter <Tare Chute> and <Tare Divert> values. ⇒ For KSU-II/KCM select parameter then press ⊡ENTER . ⇒ For KSL press ⟨⇧←TARE⟩. ⇒ For KSC press ⟨T←— Tare⟩ .
TARE CHUTE Tare Chute	Tare weigh of the Chute SFT. Range: 0 to SFT Gross Weight Range Default: 0 kg.
TARE DIVERT Tare Diverting Channel	Tare weigh of the Divert SFT. Range: 0 to SFT Gross Weight Range Default: 0 kg.
THRESH CHUTE Threshold Chute	When the net weight on the Chute channel falls below this value, the massflow is set to <0> and the LEDs indicate a 'STOP'. Also engages the Auto Tare function if enabled. Range: 0 to SFT Gross Weight RangeDefault: 10 g.
THRESH DIVERT Threshold Diverting Chan	When the net weight on the Divert channel falls below this value, the massflow is set to <0> and the LEDs indicate a 'RUN'. Also engages the Auto Tare function if enabled. Range: 0 to SFT Gross Weight Range Default: 10 g.
Table page 1 of 2	

Parameter	Definition
BYPASS VALVE Bypass Valve(Manual Override)	This entry actuates the bypass inlet valve. <ON>: Manual mode. Forces the Bypass Valve on. <OFF>: Automatic mode. Automatic bypass sequences will occur when the <BYPASS INT> setting is non-zero. Default: OFF
BYP. INTERVAL-[sec] Bypass Interval	This entry sets the time interval in seconds for the automatic taring function to occur when the valve diverts flow from the weighing channels to the back of the flowmeter. Zero switch the automatic taring function off. Range: 30 to 9999 seconds, Default: 0 seconds.
SPAN Massflow Span	This value calibrates the massflow display to be accurate to the actual flowrate. If necessary, calibrate the SFM using the following formula. New Span = Displayed Span x (Product Weight/Totalizer Value) Default: 1.000

Table page 2 of 2

1.1.1   Bypass sequence of events

ℹ

• Total time 7-10 seconds for this action.

1. Bypass Interval Timer times out.
2. Bypass valve switches to establish flow behind the weighing portion.
3. After a short time, (pneumatic timer) one pulse of blow off air occurs for the time specified.
4. If the weight on the chute and divert drops below the chute and divert thresholds, an auto tare occurs. Then the bypass valve switches back to normal position.

1.2 Calibration menu

Use the Calibration menu to perform calibration.

Parameter	Definition
CAL MODE Calib Mode	This entry establishes the method that will be used during the auto calibration routine. If <Overall> is selected, the flowmeter will be calibrated at one flow rate. If <Lin Point#1-3> selections are used, the operator will calibrate the flowmeter over three operating flowrates that correspond with the entry <Lin P1>, <Lin Pt2>, <Lin Pt3>. Selections: Overall, Lin Pt1, Lin Pt2, Lin Pt3 Default: Overall
AUTO FF CALIB	This action permits easy flowmeter calibration. For this the program parameter <CAL DC> and <CAL TIME> have to be entered. Material is discharged for the value of <CAL TIME>. **Notes:** • Calibration can be canceled with **STOP**. • Pressing **ENTER** instead of **RUN** as noted above will abort the AUTO_CALIB routine and return the user to the HOME menu. • Performing an AUTO_CALIB function on an already running feeding system will have no effect upon operation. ▲ This command will start the feeding system. Make sure that nobody is working on the equipment.
⚠CAUTION	⇒ For KSU-II/KCM select this parameter, press **ENTER** [ENTER] twice and then **RUN** [RUN] . ⇒ For KSL press **MORE-F5** then press [Auto Cal] then press **RUN**. ⇒ For KSC press [Calc. Feedfactor] then press **RUN**.
CALIB REMAIN [s]	A count down timer for the auto calibrate cycle. It shows how many seconds are left in the Calibration cycle.
CAL PROD FED Calibrate Product Fed	Shows the amount of material discharged during calibration cycle as calculated by the controller. Input range: Display in weight units
Table page 1 of 2	

Parameter	Definition
ACT PROD FED Actual Product Fed	After the Feedfactor test has been completed, enter the weight of the actual delivered product in this variable. The <SPAN> in the CALIBRATION Menu will be automatically calculated. If you wish to calculate the <SPAN> manually, just ignore this entry and proceed to the PRODUCT CHANGE Menu and enter the computed span there. Default: 0
SPAN Massflow Span	The weight span is automatically calculated when an entry is made to the <ACT. PROD FED> variable. <SPAN> corrects for massflow inaccuracy. For feeding, the span must be nearly 1.000 or there may be a problem with the weighing system. If necessary, calibrate the SFM using the following formula. New Span = Displayed Span x (Product Weight/Totalizer Value) Input range: 0 to 9.99 Default: 1.000
CAL CORRELA-[%] Calibrate Correlation	Will be automatically calculated during calibration. The value shows the reliability of the calibration data. A value of 100% means that the weight samples taken during calibration are extremely uniform indicating smooth product discharge and no weight disturbances. Input range: Display only [%]
CAL CORR LIM-[%] Calibrate Corr Limit	If the <CALIB CORRELATION> is below this limit value the calibration test aborted. **Note:** This value self-adjusts after each completed calibration cycle. Input range: 0 to 99.9% Default: 80%
CAL DC-[%] Calibrate Drive Cmd	Drive command used during the auto calibration cycle. Input range: 0 to 100% Default: 10%
CAL TIME-[sec] **Calibrate Time**	Input of the duration of the automatic calibration cycle. Input range: 15 to 999 seconds Default: 30 seconds
A0, A1, A2	Linearization coefficients for the Smart Flow Meter. These will be calculated if the auto calibration is done using the Lin Pt method. If not, they will remain as default: Default: A0 = 0.000, A1 = 1.000, A2 = 0.000

Table page 2 of 2

1.3 Alarm menu

This menu sets the alarm parameters and limits.

i Any alarm that is set in percent, is disabled when the entry is <0>.

1.3.1 Limits sub-menu

Parameter	Definition
MASSFLOW ERR+[%] Massflow (+) Alarm Limit	Massflow error limit is the permissible difference in percentage between the setpoint and mass flow without triggering an alarm.
MASSFLOW ERR-[%] Massflow (-) Alarm Limit	Input range: 0 to 100% Default: 10%
DRIVE CMD HI [%] Drive Command High Limit	The Drive Command High alarm is triggered when <Actual Drive Command> exceeds this value. Input range: >DRIVE CMD LO to 102% Default: 99%
DRIVE CMD LO-[%] Drive Command Low Limit	The Drive Command Low alarm is triggered when <Actual Drive Command> is below this value. Input range: < DRIVE CMD HI to 0% Default: 0%
MIN FLOWRATE Minimum Massflow Limit	Triggers a Minimum Flowrate alarm if the massflow through the SFM falls below this limit. Input range:< 0 to Max SetpointDefault: 0.00 kg/hr. **Note:** Only functional in Volumetric mode.
MAX FLOWRATE Maximum Massflow Limit	Triggers a Maximum Flowrate alarm if the massflow through the SFM exceeds this limit. Input range:< 0 to Max SetpointDefault: 0.00 kg/hr. **Note:** Only functional in Volumetric mode.

1.3.2   Alarm setup sub-menu

Parameter	Definition
ALARM DELAY-[sec] Alarm Delay	Time between the alarm detection and activation of the alarm relay output when the alarm is of the type <Timed> or <Timed-Stop>. The alarm output will not be activated and the alarm will be cancelled if the fault is corrected within this time period. Input range: 0 to 999 seconds Default: 30 seconds.
STARTUP DELAY-[sec] Startup Delay	Time during which process related alarm signals are suppressed when the machine is being started up. See section 1.3.1. e.g. Massflow High error is suppressed. Input range: 0 to 999 seconds Default: 60 seconds.
STOP CLRS ALARM Clear Alarm on Stops	Select <Yes> if alarms are to be cleared when a stop occurs. Select <No> if alarms are not to be cleared during a Stop action. Default: No
ALR Number of Selected Alarm	Input of the alarm number, which can be selected from the list in the appendix. With the programming variable ALARM MODE the selected alarm number can be influenced.
ALR Name of Selected Alarm	Shows the alarm function for the selected alarm number.
ALARM MODE Selected Alarm Mode	The selected alarm at the variable Alarm number can be influenced as follows: **Setting** **Definition** IGNORE Alarm will be ignored. IMMED Alarm will be activated immediately but ALS output will not change. IMMED-STOP Alarm will be activated immediately and ALS output switches ON. TIMED Alarm will be activated after entered startup up- and alarm delays but ALS output will not change. TIMED-STOP Alarm will be activated after entered startup and alarm delays and ALS output switches ON. Selection will depend upon the action desired. See section 1.3.3 for additional information.
Table page 1 of 2	

Parameter	Definition
STOP BY Feeder Stopped By	This message displays what caused the KCM to last stop. **Note:** The KSL will display this data on the Alarm Log screen. • Board reset: KCM CPU was shutdown • Local display: KSU-II/KCM stop key pressed • External display: KSL or KSC stop key pressed • ALS Input: Alarm shutdown input caused the stop • Run DISA: Run Enable input caused the stop • Stop input: External bit input stop function • MDU DISA: Drive disabled stopping the output • Calib: Controller has completed its calibration routine • Tare: Controller has completed its tare • Watchdog: an internal timer failure reset the KCM CPU • Zero SP: The setpoint went to zero while the machine was running • Emptying: The emptying function, when complete, causes the KCM drive to stop • Interlock: The interlock input prevents the KCM from running

Table page 2 of 2

1.3.3   Alarm mode actions

The following chart is important in that it describes the functions of controller outputs and display LEDs under differing alarm conditions.

Notes:

- Alarm Relay is On for no alarm (fail-safe).

For Alarm Stop to actually stop the machine, the Alarm shutdown output must be wired to the Alarm Shutdown input.

Alarm Mode	Alarm Display	Alarm LED	ALS Digital Output	Alarm Relay	ASR Bit
Ignore	Off	Off	Off	On	On
Alarm - Immediate	On	On-blinking	Off	Off	On
Alarm - Timed	On	On-steady during time-out / On-blinking after time-out	Off	Off after time-out	On
Alarm Stop - Immediate	On	On-blinking	On	Off	On
Alarm Stop - Timed	On	On-steady during time-out / On-blinking after time-out	On after time-out	Off after time-out	On

Table: 1 Alarm mode function

1.4 Tuning menu

This menu programs the tuning and control parameters for the application.

1.4.1 Tuning parameters.

Parameter	Definition
DISPLAY FILTER [sec] Display Filter	Input of the time over which the mass flow display is determined. The greater the value the more stable the display. Input range: 0 to 999 secondsDefault: 15 seconds
PROP GAIN Proportional Gain	This is the inverse of proportional gain used by the controller for tuning the controller if it is used for flow rate control. Input range: 0 to 10 Default: 0.500
INTEGRAL TIME [sec] Integral Time	The integral time for the control loop. The higher the value the more slowly the controller responds to a flow error. **Setting Reaction Consequence** 200: slow response to flow changes: poor flow regulation. 2: fast response to flow changes: unstable and reactive control. Input range: 0 to 500 seconds Default: 3 seconds
DERIV TIME Derivative Time	Time in seconds for derivative action for PID control. Input range: 0 to 50 seconds Default: 0 - disables function
MF FILTER-[sec] Massflow Filter	This value sets the filter time constant for the massflow calculation. The larger the value, the more filtering is applied to the massflow calculation. Input range: 0 to 100 seconds.Default: 2.5 seconds.
SAMPLE TIME [ms]) Weight Sample Time [ms]	Setting of the weighing cells' measuring cycle in milliseconds. The weight on the weigh belt is measured using this value during feeding. Input range: 80 to 8000 msec. Default: 160 msec.
SFT CUTOFF[sec] SFT CutOff Frequency	Cutoff frequency for the SFT internal digital filter. A lower value represents a more stable weight display albeit slower control response. When the adaptive tuning is <On>, this value is automatically set. Input range: 0.033 to 2 secondsDefault: 0.4 seconds

1.5   Scale menu

This menu programs the scale parameters and SFT operation in two separate menus.

1.5.1   General scale setup sub-menu

Parameter	Definition
NET WT CHUTE Net Weight Chute	Display of the current net weight of the feeding material on the chute. Input range: Display only 0 to scale range [kg]
NET WT DIVERT Net Weight Diverting	Display of the current net weight of the feeding material on the divert channel. Input range: Display only 0 to scale range [kg]
GRS WT CHUTE Gross Weight Chute	.Display of the current gross weight on the chute. Input range: Display only 0 to scale range [kg]
GRS WT DIVERT Gross Wt Diverting Chan	Display of the current gross weight on the divert channel. Input range: Display only 0 to scale range [kg]

1.5.2   SFT Setup sub-menu

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• The Chute Channel SFT must be set to address <1>.

• The Divert Channel SFT must be set to address <2>.

SFT REQUIRED Number of SFTs Required	Input of the number of connected SFTs. Enter <2> as two SFTs are used in the SFM. Input range: 2 to 2
REPOLL	This command will cause the controller to execute a poll on the weight channel to locate connected and operational SFTs by address. ⇒ For KSU-II/KCM select this parameter and press [ENTER] twice. ⇒ For KSL press [Poll] ⇒ For KSC press [SFT Poll] .
AUTO READDRESS Not on KSL/KSC	This parameter allows SFTs to be auto-readdressed automatically. See section 1.5.4 for more information. ⇒ Press [ENTER] .

Table page 1 of 3

SFTs SFT Configuration	The addresses and error signals of the connected weighing cells are displayed.Typically the parameter will appear as: <-12------D> The number representing the address of the SFT. Other codes in place of the SFT address include: ? = Invalid response from SFT -- = No SFT at this address t = SFT no longer responds. Weight channel data communication failure f = Internal failure in the SFT, replace SFT D = KCM drive address E = HCU / LSR address F = ActiFlow address For a new initialization of the display press **ENTER** twice at the variable <REPOLL>. Input range: Display only
SFT SELECTED Node # Of Selected SFT	Selects the SFT to query parameters: SFT #, SFT SN#, SFT ADDRESSED, SFT WEIGHT, SFT TYPE, SFT STATUS. Input range: 1 to 12
SFT ADDRESSED SFT Addressed	Switching <Off> will address the selected SFT to <0>. Switching <On> sets the SFT address selected in the SFT SELECTED program parameter if there is an available spare SFT. Input range: On or Off
SFT WEIGHT SFT Weight	Displays the current gross weight on the selected SFT. Input range: Display only
SFT TYPE SFT Type	Displays the type of the selected SFT. Input range: Display only
SFT STATUS SFT Status	SFT error display. The <Process Status Word> of the selected weighing module is displayed. Any status word except 00000183 or 00000181 indicate SFT failures. Input range: Display only see chapter (2.1.3)

Table page 2 of 3

SFT #	
SFT Software or SFT Board SW Rev	Display of the software version of the selected SFT. Input range: Display only
SFT SN #	
SFT Serial # (Number)	Reports the serial number of the selected SFT.
SFT TEMPERATURE	
SFT Temperature	Indicates the SFT's internal temperature, in degrees Celsius, of the selected SFT, if the SFT software supports this display parameter.

Table page 3 of 3

1.5.3   SFT Addressing

SFT version 'S' and later version SFTs, have special means to allow readdressing of individual SFTs with the same address. These are:

1. A command to poll and identify SFT's with the same address based on their serial number.

2. A command to change the address of a SFT also based upon serial number.

Terminology:

• New SFT: software version = 'S' or later

• Old SFT: software version 'N' to 'R'

• Note: SFT version 'M' (1st FAST SFT 1997) will not automatically address since they have no means to change the address 'on the fly'

• Spare SFT: SFT has address <0>

• Poll: Polling the internal channel address 0 to 12 to see on which address any connected SFT responds

• Auto Address: Automatically change the address of a Spare SFT to the next available address

• Auto Readdress: Automatically readdresses all SFT's from 1 to n

Auto addressing rules:

1. Auto addressing takes place on power-on with a present spare SFT on address 0.

2. If an SFT is found on address 0, it gets readdressed to the next available address.

3. If one or more new spare SFT's are found on address 0, they get readdressed to the next available address.

4. A single SFT on any address > 0 stays at the same address after addressing.

5. If there are several SFT's occupying the same address, these SFT's get addressed to the next available address.

6. If an old SFT is found together with new ones on the same address, the new ones get readdressed, the old one stays at the same address.

Auto readdressing by user command only rules:

The rules are the same as for auto addressing but:

1. All new SFT's get readdressed to 1, 2, 3 … n where the old SFT's will stay on their current address.

2. SFT's get addressed in the order they are found. Thus, if there is no conflict and the addresses are 1…n, the final addresses will be the same as before.

1.5.4   Manual addressing of SFTs

To set the address of a newly installed SFT to a prescribed address, follow the next procedure.

1. Select SCALE menu, SFT sub-menu.
2. View SFTs variable to verify the SFT in question is at address <0>.
3. Select <SFT SELECTED>.
4. Enter the new SFT address.
5. Select <SFT ADDRESSED>.
6. Select <On>.
7. View SFTs variable to verify the SFT is now at the desired address.

1.5.5   Manual address change of SFTs

To manually change the address of a properly installed SFT to a new defined address, follow the next procedure.

1. Select SCALE menu, SFT sub-menu.
2. View SFTs variable to verify the SFT address to be changed is present.
3. Select <SFT SELECTED>.
4. Enter the SFT address seen from step 2.
5. Select <SFT ADDRESSED>.
6. Select <Off>.
7. View SFTs variable to verify the SFT address is now <0>.
8. Select <SFT SELECTED>.
9. Enter new SFT address.
10. Select <SFT ADDRESSED>.
11. Select <On>.
12. View SFTs variable to verify the SFT is now at the desired address.

1.6   Machine menu

This menu programs the feeder specific information. The data is arranged in three separate screens or menus.

1.6.1   General Setup sub-menu

| SETPOINT MODE

Setpoint Mode	Setting	Meaning
	LOCAL	Feeder is operated as an individual unit.
	RATIO	Percentage of an external analog setpoint input = operating setpoint.
	DIRECT	External analog setpoint input = operating setpoint.
	LINE1-8	Feeder Setpoint is entered from the Line overview Page. In this mode the feeder is assigned to a line. It's called recipe mode. Use Line1 for KSL.
	Input range: See list Default Local	
MAX SETPT

Maximum Setpoint | Input of a maximum permissible setpoint value. | |
	This value depends on the maximum throughput performance of the feeder.	
	Note: This value also scales the ratio setpoint input and massfow and setpoint analog outputs.	
	Input range: 0 to 999999 kg/h Default: 7200 kg/hr.	
UNITS

Units Selection | Selection of the desired units. | |
	Note:	
	This selection change automatically all weight specific units.	
	Setup:	
	kg/h, kg/min, lb/h, lb/min, T/h (metr. Ton), ET/h (engl. Ton), gr/h, gr/min.	
	Input range: See list Default kg/h	
RUN TIME-[hours]

Feeder Run Time | Display of the total run time in hours. A value may be entered as a baseline. | |
| | Input range: Normal Display only | |
| FDR ADDR

Feeder Number or Feeder Address | Address of the selected KCM. | |
| | **Note:** | |
| | • If the KCM CPU DIP switch, positions <1> to <5> are all set to <0>, then the feeder address is set by this entry, else it is from the DIP switch and then this parameter is 'read only'. | |

Table page 1 of 2

APPLICATION	Input of the application type:
Control Type or Application Type	**Selection:** LWF, WBF, SFM, PID, VOL, LWB, WBB, SFB, XTR, Confirm, GWB Input range: See list　　　Default: SFM
LANGUAGE Only in KSU-II/KCM	Selects the desired language for the Display. Choices are English, German, French, Spanish, Italian and Custom.
SCREEN SAVER	When set to <On> activates the KSU-II and KCM screen saver function. Input range: On or Off　　　Default: On
Feeder Name	Enter feeder name at KSL only.

Table page 2 of 2

1.6.2　Loading language file

ℹ It is important to erase any previous file before downloading a new one since it will not overwrite an existing file.

1. To load the language file to the KCM, switch parameter SYSTEM - COMMUNICATION - CONFIG MODE to "Diag".
2. Connect the PC with a null modem cable to the config port and run a terminal program like Windows HyperTerminal with 19200, 8, n, 1.
3. Press enter on the PC to start the interactive menu. Next press "2" to select Flash File Information,
4. Press "4" to erase the previous file and "y' to confirm the erase.
5. Press "3" to download the file, then load the file with Z-Modem from HyperTerminal.

1.6.3　Changing feeder control application type

To change the feeder from one application type to another, perform the following procedure.

1. Select <APPLICATION>
2. With **NEXT,** select the desired new application like <WBF>.
3. Press **ENTER**.
4. Press **ENTER** again or wait for the parameter <APPLICATION> to again appear.
5. Select <Confirm>
6. Press **ENTER** to load new application.

1.6.4   KSU-II/KCM screen saver description

The screen saver is used to protect the screen from burning out when always the same data is shown. The screen saver is based on the parameter <MACHINE SETUP> menu, <GENERAL> sub-menu, <SCREEN SAVER> parameter to <On/Off>. The value On or Off is held in the KSU-II EEPROM. This allows to program each KSU-II individually to have the screen saver on or off. The default value is On.

The screen saver functions as follows:

1. After setting the screen saver to ON or in case it is already ON whenever a key is entered, a 12 hour timer starts to count down.

2. If the 12 hour timer has counted down to 0, the screen is set to its lowest brightness level. The screen data displayed is unchanged. The 12 hour timer restarts.

3. If the 12 hour timer has counted down again to 0, the KSU-II is set to the Home page and the screen is cleared. A screen saver character (all pixels on) moves smoothly through each character position line by line. When it reaches the last character position it restarts on the first top left position.

4. When the screen saver is in state 2 or 3 above, any key entered in the keypad will restore the screen to the normal brightness and screen data. The 12 hour timer restarts.

1.6.5   Machine set-up sub-menu

The following parameters set-up specific Smart Flow Meter mechanical configuration.

Notes:

- For the KSL, it is shown as < Chute>

Parameter	Definition
FEEDER TYPE Feeder Type Selection	This entry selects the type of Smart Flow Meter to be used. Choices are: SFM275, SFM350, SFM275B, SFM350B, Other Default: SFM275
CHUTE LENGTH Chute Length	Chute length in meters. Set to 0.300 for SFM275 or 0.600 for SFM350. Automatically set with <FEEDER TYPE> Selection in the MACHINE Menu but can be manually changed. Be careful as this will affect calibration.
CHUTE ANGLE Chute Angle (Degrees)	Chute angle in degrees from the horizontal. Adjust using the set-up procedures in the installation manual for the particular flow meter. Default: 60.0 deg
BLOW OFF Blow off Time Chute	Time in milliseconds for the blow-off action used to clean the chute with compressed gas. Only shown when an Digital output is programmed as <Blow Off> Range: 0 to 9999 msec. Default: 1000 msec.

1.6.6   Motor sub-menu

ℹ   Some parameters will not be displayed for every drive case.

The motor sub-menu is shown for two types of drives.
- DC drives for 450 and 1600 watts
- AC interface drive

1.6.7   Motor sub-menu for DC motor

Parameter	Definition
PICK UP TEETH Speed Pickup Teeth	Input of the number of teeth on the pick up gear. This gear is used for measuring the speed. Input range: 0 to 9999 Default: 120 for DC drive, 400 for stepper drive
ACTUAL POWER-[watts] Actual Motor Power	Displays the actual consumed motor power. Input range: Display only [W]
MAX. MOT POWER-[watts] Max Motor Power	This entry sets the maximum output power to the motor when using the internal KCM DC motor drive.(See nameplate on DC motor for value) Input range: 25 to 1600 W Default: Depends upon installed drive
MAX MOT VOLTAGE Motor Voltage	This entry sets the maximum output voltage to the motor when using the internal KCM DC motor drive. (See nameplate on DC motor for value) Input range: 90 to 220 Vdc Default: 180 Vdc
MAX MOT SPEED-[rpm] Maximum Motor Speed	Input of the maximum motor rpm for 100% drive command. Input range: Drive specific. Default: drive specific (See nameplate on DC motor for value)
MDU STATUS MDU Status	The MDU status codes reveal operational condition of the Drive. See listing of MDU status codes in section 2.1.1.
DC CEILING-[%] Drive Command Ceiling	Limitation of the drive command output to the motordrive. Input range: 10 to 125% Default: 110%

1.6.8 Motor sub-menu for AC Interface drive

i When no speed sensor is available then program the <PICK UP TEETH> to zero

Parameter	Definition
PICK UP TEETH Speed Pickup Teeth	Input of the number of teeth on the pick up gear. This gear is used for measuring the speed. Input range: 0 to 9999 Default: 120
MAX MOT SPEED-[rpm] Maximum Motor Speed	Input of the maximum motor rpm for 100% drive command. Input range: Drive specific. Default: drive specific (See nameplate on motor for value)
MDU STATUS MDU Status	The MDU status codes reveal operational condition of the Drive. See listing of MDU status codes in section 2.1.2.
DC CEILING-[%] Drive Command Ceiling	Limitation of the drive command output to the motordrive. Input range: 10 to 125% Default: 110%

1.6.9 Using an external motor drive

i The CPU outputs 0-20 mA only.

1. The AC Interface drive board is installed.
2. In the ANALOG OUTPUT sub-menu, set the following:
   – <ANALOG NUM>: <CPU>
   – <FUNCTION>: <Drive Command>
   – <DEADBAND>: <0.25>
   – <AOUT MAX>: 100% (This is the output span value)
   – <AOUT MIN>: 20% (This is the offset value)
3. Make the wiring connects per the provided drawing.
4. Run the feeder in volumetric control
5. Adjust <Aout Max> to get the desired motor speed for a given value of drive command.

1.6.10   Service sub-menu

Parameter	Definition
S.VAR Service Variable Function	Display of the service variable name. See list in the appendix see section 2.2.
S.VAR VALUE Service Variable Value	Display and change of the service program value as selected with S. VAR.
TRACETICK Tracetick	This parameter sets the time interval for recording operating data to memory so that it can be viewed on a PC for analysis. The data stored includes the following: Setpoint, Massflow, Drive Command The following operational states: Grav, Drive Enable, Any alarm present are also recorded. Selections: Stop: The trace recording is stopped and the data can be read from the Configuration serial data port using HyperTerminal. When <Stop> is selected, the data can be read from the KCM at any time as long as power to the KCM is not interrupted. Restarting of the <TRACETICK> can be done without losing data if done within 1 hour of stopping the trace. 1 sample: Each sample point of data is recorded. No more than five minutes of data can be stored without older data being over-written. 1/4 second: 4 samples per second of data 1 second: 1 sample per second of data 5 seconds: 1 sample of data very 5 seconds 15 seconds: 1 sample of data very 15 seconds 60 seconds: 1 sample of data very 60 seconds Default: 1 second **Notes:** • The default value of 1 second will return after a KCM power interruption. Any other value of <Trace Tick> is not stored during a power interruption. • There are 3600 individual samples of data in storage. So for a 1 second time tick, 1 hour of data is preserved. For a 60 second time tick, 60 hours of data are stored. • Please see document 0690020601 for operational details on using this resource.

1.6.11 Performance sub-menu

Parameter	Definition
INT CHANNEL-% Internal Channel-%	The internal channel performance is calculated in two parts, the bandwidth load and the error counter where it considers 10 errors per minute as bad and 100% load as bad. Both values are taken in square as follows: IntChanPrf% = 100 * 1 - [(Load² + (0.1*Err/min)²) /2] Example: 5 errors/min and 50% load = 75% performance. Expect normal values of 75% to 99%.
KCM TEMP [deg C] KCM Temperature	Displays the actual temperature in the KCM in °C. Input range: Display only.
TORQUE-% Only for DC motor drives Torque-%	The motor torque is derived from the power indication according to the following formula: Torque = 100*(actual power * nominal speed) / (nominal power * actual speed). **Notes:** • On low speeds, this indication might be inaccurate. • 100% torque is the maximum allowed. • Not for vibratory feeders or for AC Drive Interface. • At low speeds, torque will reach a maximum of 100% before \<Actual Power\> reaches \<Maximum Motor Power\>. At high speeds, the opposite will occur.
BRUSH REMAIN-% Brush Remain-% Only for DC motors	The DC motor brush life is estimated according to the following formula: Estimated_Life = Expected_Life * Nominal_Power / Current_Power To indicate the remaining life, the following formula is calculated once per second: Brush_Remain = Brush_Remain - [(100/(3600*5000))*(MotorPower / Nominal_Power)] Where: 100 indicates in percent (3600 * 5000) expected life in seconds (Motor_Power / Nominal_Power) The current power ratio, limited to ≥ 0.1 If the motor is new, one should enter 100% in \<BRUSH REMAIN\> Also after checking the brushes, the parameter can be modified on the basic of current brush life.

1.7   I/O setup menu

These menus program the digital and analog I-O functions. The KSL shows these variables over four pages; Digital Output, Digital Input, Analog Input, Analog Output. The KSC uses 3 screens.

See KCM Electronics manual for wiring details

1.7.1   I/O Definitions:

• DENA = drive enable

• ALS = alarm shutdown

• Inputs with an * are activated by an edge transition. All other inputs are by level

• ^ indicates a digital output that can be mapped to DIGOUT MAP

• CPU_In1...CPU_In4 are for the programmable digital inputs on the CPU pcb, terminal block J8

• MDU_In1... MDU_In2 are for the programmable digital inputs on the MDU (Drive) pcb, terminal block J1

• CPU_Out1...CPU_Out4 are for the programmable digital outputs on the CPU pcb, terminal block J8

• MDU_Rel1... MDU_Rel3 are for the programmable relay outputs on the MDU (Drive) pcb, terminal block J5

• External_In1...External_In8   and   External_Out1...External_Out8 are used for remote MODBUS I-O.

1.7.2 Digital input sub-menu

Parameter	Definition
DIG IN Digital Input	Selection of the desired bit input of the KCM for programming. Select any of the following inputs: CPU1-CPU4, MDU_IN1, MDU_IN2, Spare 1, Spare 2, Ext _In1 - Ext _In8. **Note:** For Ext In function to work, Modbus I-O must be configured first and the external I-O module (e.g.WAGO) connected via K-Port 2. Input Range: See list
FUNCTION Digital Input Function	Function of the selected input no. [1-24]. Selection: None, Start*, Stop*, Interlock, Run Enable, ALS Input, Ack Alarm*, Clr Alarm*, Start/Stop, Vol Mode, Loc/Ext, Rat/Dir, Ext Alarm, Total Clr*, Data Lock, Bypass FB, Normal FB, Calib*, Jog Input Range: See list Default: CPU_In_1 = Start, CPU_In_2 = Stop, CPU_In_3 = ALS Input. **Note;** If feeder is running then: • Interlock requires no Start command upon release of Interlock for the feeder to re-start • Run Enable requires a Start command upon release of Run Enable to re-start the feeder
STATE Digital Input State	Displaying the actual status of the selected digital input. Input range: Display only (Off or 0 = not active, On or 1 = active)
POLARITY Polarity	The selected digital input changes the function from e.g NO to NC. Selections are: Input range: Normal or Inverse Default: Normal

1.7.3   Digital output sub-menu

i It is not allowed to change Digital output function, polarity and map if the feeder is running.

Parameter	Definition
DIG OUT Digital Output	Selection of the desired bit output of the KCM for programming. Select CPU_Out1 to CPU_Out4, MDU Relay 1, MDU Relay 2, MDU Relay 3, Spare, Ext_Out1 to Ext_Out8. Input Range: See list **Note:** For Ext Out function to work, Modbus I-O must be configured first and the external I-O module (e.g.WAGO) connected via K-Port 2.
FUNCTION Digital Output Function	Function of the selected output no. [1-16] Selections: None, Feeder Run, Any Alarm, Alarm Relay, ALS Out, Drive Ena, Grav Mode, PSR-MAP^, ASR MAP^, Totalizer Pulse, Bypass, Blow-off, SFTCooling Input Range: See list Default: CPU_Out_1 = Feeder Run, CPU_Out_2 = Refill, CPU_Out_3 = Hard Alarm, CPU_Out_4 = Drive Enable, MDU_Relay1 = None, MDU_Relay2 = Refill, MDU_Relay3 = None
STATE Digital Output State	Displaying the actual status of the selected digital output. Input range: Display only (Off or 0 = not active, On or 1 = active)
POLARITY Polarity	The selected digital output changes the function from e.g. NO to NC. Selections are: Input range: Normal or Inverse Default: Normal
EXT TOT PULS External Totalizer Pulse	Input of the resolution of an external Totalizer Input range: 0* to 999999 Default: 0 kg/pulse The maximum pulse rate is 3 pulses/second. The calculation of the increment is as follows: Ext Tot Increment(min) = Massflow[kg/hr]/1000
DIGOUT MAP Digital Output Map	If at the variable <FUNCTION> the selection PSR-MAP or ASR MAP was made, it is possible to program any output function listed in the table in the appendix. See sections 2.3 and 2.5.

1.7.4 Setpoint input sub-menu

Refer to manual KCM Electronics for more information.

Parameter	Definition
SOURCE Analog Input Source	Selection of the desired remote setpoint input for the KCM. Select CPU_0-10kHz, CPU_Analog, Extern **Notes:** • See KCM Electronics manual for wiring details when selecting CPU source inputs. • For Extern function to work, Modbus I-O must be configured first and the external I-O module (e.g.WAGO) connected via K-Port 2. • Check the jumper on the KCM CPU for the following possible choices: 0-5 Vdc, 0-10 Vdc, 0-20 mA if CPU_Analog is the input selection.
AIN VALUE-[%] Analog Input Value%	Display of the actual input value in percentage of the maximum value, AinMax as defined below. Input range: Display only
AIN MIN-[%] Analog In Value Min	Scaling of the analog output for the minimum value. (Offset adjustment e.g. 20% for 4 mA). This value can be used also to invert the analog input. Input range: 0 to *100% *Inverted 100%
AIN MAX-[%] Analog In Value Max	Scaling of the analog output for the maximum value. This value can be used also to invert the analog input. Input range: 100 to *0% Default: 100% *Inverted 0%
DEADBAND-[%] Deadband	Input of the deadband in percentage of the maximum value. Changes at the input below this value will have no change to the setpoint value. Input range: 0 to 100% Default: 0%

1.7.5   Analog output sub-menu

i

• The KCM CPU only outputs a 0-20 mA current value. Use appropriate resistors to convert to the desired voltage.

• Maximum source voltage is 12 Vdc for the current output.

Refer to KCM Electronics manual for more information on electrical connections and operational limitations.

Parameter	Definition
AOUT NUM Analog Output	Selection of the desired analog output for the KCM. Select: CPU, EXT1 - EXT3. Input range: See list **Note:** For Ext1-Ext3 functions to work, Modbus I-O must be configured first and the external I-O module (e.g.WAGO) connected via K-Port 2.
FUNCTION Analog Output Function	The analog output can be assign with the following function: SETPOINT (20mA/Max. setpoint) x Actual setpoint MASSFLOW (20mA/Max. setpoint) x Massflow NET CHUTE (20mA/ScaleRange)*NetChuteWt NET DIVERT (20mA/ScaleRange)*NetDivertWt DRIVE COMMAND (20mA/100%) x Percent drive command MOTOR SPEED (20mA/Max Mot RPM) x Act Mot Spd TORQUE (20mA/100%) x Percent torque Input range: See list Default: None
AOUT VALUE%] Analog Output Value%	Display of the actual output value in percentage of the maximum value. Input range: Display only
AOUT MIN Analog Output Minimum	Scaling of the analog output for the minimum value. (Offset adjustment e.g. 20% for 4 mA) This value can be used also to invert the analog output. Input range: 0 to *100% (*Inverted 100%)
AOUT MAX. Analog Output Maximum	Scaling of the analog output for the maximum value. This value can be used also to invert the analog output. Input range: 100 to *0% Default: 100% (*Inverted 0%)
DEABAND-[%] Analog Output Deadband	Input of the deadband in percentage of the maximum value. Changes at the output below this value will have no change to the process value. Input range: 0 to 100% Default: 0%

1.7.6 Calibrating analog I-O

The formula for an analog value output can be demonstrated by the following formula as an example. Setpoint will be used as the value and 20 mA is the full scale representation.

$$\mathrm{Val} \;=\; 20 \times \left[\left(\frac{\mathrm{Setpoint}}{\mathrm{MaxRate}}\right) \times (\mathrm{AoutMax} - \mathrm{AoutMin}) + \mathrm{AoutMin}\right]$$

Deadband works as indicated in the following equations.

$$\mathrm{Val} \le \mathrm{Deadband}(\mathrm{Val} \to 0)$$

$$\Delta\mathrm{Val} \le \mathrm{Deadband}(\mathrm{Val} \to \mathrm{PreviousVal})$$

$$\Delta\mathrm{Val} > \mathrm{Deadband}(\mathrm{Val} \to \mathrm{NewVal})$$

To calibrate an analog output, do the following. In this example, setpoint is the output parameter.Have your calibration meter connected to the analog output.

1. Enter Setpoint =0.
2. Modify the min value so that the actual analog output is correct.

Note: for a 4-20 mA signal, this will be around 20%.

3. Enter Setpoint = Max Setpoint, Adjust Aout max value so that analog output is exactly correct.
4. Double check with Setpoint = 0, but no adjustment is normally required.

1.7.7   Modbus I-O sub-menu

i   This menu is not available on the KSL, K-Vision or KSC.

Parameter	Definition
ADDR 80 - 83	These are the read only I-O addresses for any external Modbus I-O that has been connected to K-Port 2. For each address, the module type (if connected) or problem will be indicated. Possibilities at each address are: WAGO, MISSING, CONFLICT, NONE
	WAGO = the Wago system of Modbus I-O modules is connected.
	CONFLICT = Addresses of connected modules are in conflict after powering the system. Select <REBIND NOW>**.** Press **ENT** twice to clear the fault.
	MISSING or CHANGED = Module that was present is no longer found. Select <REBIND NOW>**.** Press **ENT** twice to clear the fault.
	Input range: 80 to 83 Default: 80
DETAILS	This read only parameter presents information about the operation of each connected external Modbus I-O device.
	Node Select: 80, 81, 82, 83
	Type Select: Anlg In, Anlg Out, Dig In, and Dig Out are the possible functionality for connected modules
	I/O Point: 1-8.
	– Up to 8 points, of the same type, are possible at any address.
REBIND NOW	When the I-O functions have been configured, press the **ENT** key twice to rebind variables to the I-O points installed.
	Note:
	If alarm 39 occurs (Ext_IO_Fail), the Rebind Now function can clear the alarm. However, this action will remove all external I-O function. It is best to examine why the external module failed before executing Rebind Now.
	The Rebind Now function assigns <None> to any previously programmed external I-O point and then performs a new binding based upon the rule as follows:
	Lowest module by address with lowest I-O point is assigned the lowest I-O number
	e.g. Four digital input module at address 80 is automatically bound with EXTIN1 at module input 0 to EXTIN 4 at module input 3.
	After the Rebind Now action, each I-O point requires reassignment of its function. e.g. <Start>.

1.7.8 Adding External Modbus I-O, an example

Follow this procedure to configure remote I-O.

$\Rightarrow$ Preset the Modbus I-O module to an address of 80, 81, 82 or 83.

$\Rightarrow$ Program the Modbus I-O module to follow the K-Port 2 communication specifications

– 19,200 baud, 8E1

$\Rightarrow$ Program K-Port 2 for Modbus I-O

$\Rightarrow$ Make all wiring connection between the KCM and the external modules

Then do the following:

1. Power the KCM and the external I-O modules together.

2. Use the Modbus I-O menu to perform the following set-up.

Note:

If it is not possible to power the KCM and modules together, then once everything is powered, select <REBIND NOW> parameter to permit module binding.

3. Verify that at the module preset address, the specific module is found by name at the parameter <ADDR80-83>. e.g. 80 = WAGO.

4. Open the <DETAILS> menu.

5. Enter module address at <NODE SELECT>.

6. Open <TYPE SELECT>.

7. Note that if the automatic binding was done properly, the module will have each I-O point already set to a KCM input or output point.

e.g. If the module was a digital 4 input module at address 80, the screen would look like this:

I/O POINT 1 -> EXTIN1

I/O POINT 2 -> EXTIN2

I/O POINT 3 -> EXTIN3

I/O POINT 4 -> EXTIN4

I/O POINT 5 -> None

I/O POINT 6 -> None

I/O POINT 7 -> None

I/O POINT 8 -> None

8. Go to the specific I-O menu and set the function for each active I/O point. e.g. set the digital input function for <Clr Tot>.

9. Test the function of each module I-O point.

1.8   HCU / LSR loader set-up

This menu programs the Hurricane loader function. This menu is used in place of the HSU.

i

- This menu is only displayed, if a HCU / LSR is connected.
- The HCU / LSR Loader controller is connected to the KCM via the Internal Channel.
- Be sure that the LOADER parameter is <disabled> in the LOADER menu. Hide the LOADER menu.

- See manual 0290023601 for more HCU loader operational information.
- See KCM Electronics manual for more information.
- See manual 1090034605 for more LSR operational information.

Parameter	Definition
COMMAND **Loader Command**	The following commands can be selected and be executed with the **ENTER** key: None — No function Run — Starts the conveying cycle Stop — Stop the conveying cycle Clr Alrm — Deletes all pending alarms Disch On — Starts discharge Disch Off — Stops discharge
⚠WARNING	▲ Conveying starts if you press **ENTER** at the selection <RUN>. The process can be stopped only by selection of the command stop. The **START/STOP** key on the control unit does not have a function for the loader.
CYCLE Active Cycle	Displays the current active cycle. Motor — Motor Timer active. After the timer expired the motor will stop. LoadDly — Delay until the valve is closing and a new conveying cycle is starting. Load — Hurricane is conveying material. Line Clr — Conveying pipe emptying cycle is active. DischDly — Discharge delay time. Delay = Time until the motor stops. Disch — Discharge cycle: Display only. Input range: Display only

Table page 1 of 2

Parameter	Definition
TIME [sec] Active Time	Remaining time in the current active cycle. Input range: Display only
STATUS Loader Status	Display of the current status of the HCU. Normal OK. ALARM — HCU has an alarm. PROG — HCU in programming mode. REC FULL — Receiver is full. BUFFER FULL — Buffer hopper is full. HCU COM FAIL — Serial communication between KCM and HCU interrupted. Input range: Display only
PARAM NUM Only in KSU-II/KCM	Input of the parameter number. The name and value represented by the parameter number will be displayed under the variables PARAM DESC and PARAM VALUE respectively. Input range: see section 2.1 and manual 0290023601.
PARAM VALUE Parameter Value	Input of the desired value for the selected PARAM NUM. input range: see section 2.1 and manual 0290023601.
PARAM NAME Parameter Name	Display of the parameter name selected with PARAM NUM. Input range: Display only See section 2.1 and manual 0290023601.
Table page 2 of 2	

1.8.1   Programming parameters for HCU

This table shows parameter number and description, which can be entered in the section 1.8 for HCU loader control. For a detailed description of all parameters see document 0290023601.

Param Number/ Param description	KSU Param.	Min	Max	Step	Default	Actual
P1 – Load Timer **(Cycle 3)**	Load	5 sec	300 sec	1 sec	20 sec	
P2 – Clear Timer **(Cycle 4)**	LineClr	0 sec	30 sec	1 sec	0 sec	
P3 – Discharge Timer **(Cycle 6)**	Disch	2 sec	90 sec	1 sec	10 sec	
P4 – Filter Delay Timer	Fill Dly	1 sec	5 sec	0.1 sec	5 sec	
P5 – Filter Pulse Timer	Fil Pul	0 sec	0.5 sec	0.1 sec	0.1 sec	
P6 – Motor Timer **(Cycle 1)**	Motor	30 sec	1620 sec	30 sec	5 min	
P7 – Load Delay Timer (**Cycle 2)**	Ld Dly	0 sec	20 sec	1 sec	5 sec	
P8 – Discharge Delay Timer **(Cycle 5)**	Dis Dly	0 sec	20 sec	1 sec	5 sec	
P9 – Input Filter: Receiver Proximity Sensor	In: Rec	0.1 sec	10 sec	0.1 sec	3 sec	
P10 – Input Filter: Buffer Hopper Proximity Sensor	In: BuH	0.1 sec	10 sec	0.1 sec	3 sec	
P11 – Input Filter: Supply Hopper Proximity Sensor	In: SuH	0.1 sec	10 sec	0.1 sec	1 sec	
P12 – Input Filter: Remote Start	In: Strt	0.1 sec	10 sec	0.1 sec	0.5 sec	
P13 – Input Filter: Remote Stop	In: Stop	0.1 sec	10 sec	0.1 sec	0.5 sec	
P14 – Input Filter: Discharge Valve Switch	In: DisV	0.1 sec	10 sec	0.1 sec	1 sec	
P15 – Input Filter: Filter Pressure Switch	In: FiPs	0.1 sec	10 sec	0.1 sec	1 sec	
P16 – Input Filter: Discharge Request	In: DiRe	0.1 sec	10 sec	0.1 sec	1 sec	
P17 – Input XOR Mask	Xor Msk				7F(dec127)	
P18 – Oper M (Operating Mode) 1 = Self contained with discharge valve, 2 = Single central with discharge valve, 3 = Self contained, 4 = Single Central	Oper M				1	
P19 – Clean Filter 0 = disables all cleaning, 1 = clean during discharge cycle, 2 = clean during load cycle, 3 = clean during both discharge and load cycles.	Clean M				1	
P20 – Discharge Mode, 1 = Fill mode, 2 = LWF mode	Disch				1	
P21 – Controller Address	HCUAdd				0x01	
P22 – Controller Software Version	HCU SW					
P23 – Supply Hopper Low Alarm Timer	Al ShLo	0 sec	600 sec	10 sec	0 disable	
P24 – Differential Pressure High Alarm Timer	Al DPHi	0%	100%	1%	0 disable	
P25 – Load Cycle Alarm Counter	Al Cycle	0 cycle	20 cycle	1 cycle	0 disable	
P26 – Discharge Valve Alarm Timer	Al Valve	0 sec	15 sec	1 sec	10 sec	
P27 – On/Off Counter	O/F Cnt			N/A		
P28 – Run Time Counter	Run Cnt			N/A		
P28 – Handheld display Software version	HSU SW			N/A		
P63 – Digital input states	Dig In			N/A		

1.9 System setup (only KSU-II/KCM).

i This menu is not available for KSL, K-Vision or KSC.

This menu programs the key communication functions for the KCM.
Note:

• Siemens 3694R protocol is not supported.

1.9.1 Communication sub-menu

Parameter	Definition
HOST PROT	Input of the desired communication protocol
	Input range: Modbus, ALLEN BRAD AB-CIF, Siemens 3694R, ProfibusDP, Modbus/TCP, DeviceNet, Ethernet/IP, ModbusPlus, Profinet IO.
	Default: None
HOST FILE	Select either a custom downloaded *.kgr file for data communications or select a pre-loaded file (built-in). See manual 0590020611 for details.
	Input range: Kgr File, Small, Full.
	Default: Kgr File
IP	IP Address is only present when an Ethernet Host board is installed.
	If the KGR file is used, this parameter is read-only.
NM	Net Mask is only present when an Ethernet Host board is installed.
	If the KGR file is used, this parameter is read-only.
GW	Gateway is only present when an Ethernet Host board is installed.
	If the KGR file is used, this parameter is read-only.
K-PORT1 PROT	Selects the function for K-Port1, Choices are: None, KSU, KSL, KSC/K-Vision.
	Default: KSU
BAUD RATE	Displays baud rate selections when K-Port1 is set to KSC/K-Vision or if set to KSL and the service variable K10S_KCDR is <1>.
	Choices are: 9600, 19200, 38400, 57600, 115200
K-PORT 2 PROT	Selects the function for K-Port2, Choices are: None, KSU, Modbus I-O, KSC/K-Vision.
	Default: KSU
BAUD RATE	Displays baud rate selections when K-Port2 is set to KSC/K-Vision.
	Choices are: 9600, 19200, 38400
Table page 1 of 2	

Parameter	Definition
CONF MODE	Input of the protocol for the following: Diag, KMB, Config, User IF
	Input range:see above
	Default: User IF
	Notes:
	• Select <KMB> for ParamStore.
	• Select <Config> for SmartConfig activities.
	• Select <User IF> for PC access to KCM parameter data via the Conf port.
	• Select <Diag> is used for diagnostic trace functions and for loading a language file.
Table page 2 of 2	

1.9.2   SW Version Submenu

Parameter	Definition
SELECT ONE	Selection of the Hardware
SW#	The application software part number and revision.
HW#	The hardware number and revision.
SER#	The serial number.
HPORT#	The firmware version host port board
BOOT#	The bootstrap version

Note:

• Before calling Coperion K-Tron (Switzerland) LLC service, have the SW version numbers available for your system.

1.9.3 Drive type by displayed MDU#

MDU # Software from Display	MDU Drive Type	PCB Part Number
04900-20211	1600 Watt DC motor drive	0000002610
02900-20200	450 Watt DC motor drive	0000007405
04900-20202	AC drive interface	0000003413
03900-20202	Vibratory drive	0000000684
04900-20212	Universal stepper drive	0000005987
02900-26200	LoPo stepper drive	0000001430
02900-26200	HiPo stepper drive	0000004568

1.9.4 Parameter Backup sub-menu

This menu provides a method for parameter back-up in the KCM K-Prom.

i It is important to save your programming to the K-Prom using the steps below, once your programming is verified and complete.

Parameter	Definition
PASSWORD Entered Password	Password to access the <ACTION> function of saving and recalling data from a K-PROM. Default: <1234> See section 1.9.5 on how to change this entry.
ACTION Backup Action	Action functions are: Save, Recall. <SAVE> stores active operational data to the back-up storage area of the K-PROM. <RECALL> places into active operational memory the saved K-PROM data.

1.9.5 Changing the K-PROM password.

📖 See manual 0690020601 for detailed information on changing the K-PROM password with your PC.

1.9.6   Sub-menu Clock

This menu is only available for the KCM (graphic display).

Parameter	Definition
YEAR	
MONTH	
DAY	
HOUR	
MINUTES	
SECOND	

1.10 Security menu (only KSU-II/KCM)

This menu sets access for all menus in the KSU-II/KCM.

i
- The access to the parameter in the security menu can be de-activated by the data lockout input of the KSU-II/KCM display (see section 1.10.2).

- All programmed security selections (e.g RD/WR) will be de/activated immediately by programming the ACCESS TYPE.

1.10.1 Security parameters

Parameter	Definition	
PRODUCT CHANGE	**AccessType**	**Permission**
	RD/WR	Reading and writing possible.
CALIBRATION	READ	Read only possible.
ALARM	HIDE	No access menu. Menu is not visible.
TUNING		
SCALE		
MACHINE SETUP		
I-O SETUP		
HCU LOADER		
SYSTEM		
FDR BEING VIEWED	Only shown on KSU-II	
TOTAL KEY	Select: <Clear Only>, <Rd Only>, <Any Num> as entries.	
SP ACCESS	Select: RD/WR, Read. Hide.	
KEYS	Select: All Enabled, Disa Vol/Grav, Disa AlarmClear, Disa Vol&AlCl	
	All Enabled = all function buttons active.	
	Disa Vol/Grav = disable GRAV/VOL key	
	Disa AlarmClear = disable alarm CLR key	
	Disa Vol&AlCl = disable GRAV/VOL & alarm CLR keys	

1.10.2   Function data lock out

For additional information see Electronics manuals for KCM and for KSU-II.

To activate the security function is it necessary to assign a digital input to <Data Lock> by KCM or use the data lock input from KSU-II and to connect a key switch to that input. To enable the security menu to change the settings the key switch needs to be closed. When the settings are made and the key switch is opened, the security menu and all the menus set to read only, will be read only. To prevent that an operator can disable the key switch in the I/O menu, the I/O menu should be set to read only or to hidden.

Programming procedure:

1. Close key switch.
2. Select <SECURITY> Menu
3. Select menu which needs to change.
4. Press **ENTER** key.
5. Select with **NEXT** key the security mode RD/WR or read or hide.
6. Press **ENTER** key.
7. Open key switch.
8. Check the menu for function.

2 Appendix

2.1 Status tables

2.1.1 DC Drive hex status codes

Notes:

• Failure modes occur on bits 7 to 15, excluding 9

• These codes are displayed at the KCM interface

Bit	Function	Hex Code
0	1 = Motor Run. 0 = Stop.	0001
1	1 = safety switch closed. 0 = open.	0002
2	1 = Drive enable input closed. 0 = open.	0004
3	1 = Bit 1 Input activated (low level). 0 = not activated, (high level).	0008
4	1 = Bit 2 Input activated (low level). 0 = not activated, (high level).	0010
5	1 = Relay 2 energized. 0 = off.	0020
6	1 = Relay 3 energized. 0 = off.	0040
7	1 = Serial Master Time-out.	0080
8	1 = Thermal pre-alarm (>70C).	0100
9	1 = Relay 1 energized. 0 = off.	0200
10	1 = Speed deviation	0400
11	1 = Current limit	0800
12	1 = Safety relay failure	1000
13	1 = General motor failure.	2000
14	1= Control-less running	4000
15	1 = EEPROM failure.	8000

2.1.2   AC drive interface hex status codes

Notes:

- Failure modes occur on bits 7 to 15., excluding 9
- These codes are displayed at the KCM interface

Bit	Function	Hex Code
0	1 = Motor Run. 0 = Stop.	0001
1	1 = safety switch closed. 0 = open.	0002
2	1 = Drive enable input closed. 0 = open.	0004
3	1 = Bit 1 Input activated (low level). 0 = not activated, (high level).	0008
4	1 = Bit 2 Input activated (low level). 0 = not activated, (high level).	0010
5	1 = Relay 2 energized. 0 = off.	0020
6	1 = Relay 3 energized. 0 = off.	0040
7	1 = Serial Master Time-out.	0080
8	1 = Thermal pre-alarm (>75C).	0100
9	1 = Relay 1 energized. 0 = off.	0200
10	Not used.	0400
11	Not used.	0800
12	Not used.	1000
13	Not used.	2000
14	Not used.	4000
15	1 = EEPROM failure.	8000

2.1.3   SFT status table

This table shows the table of the possible Status displayed in the scale menu at the variable SFT Status 1.5.2.

Bit	Function	Hex Code
0	1 = Group mode	0001
1	1 = Group leader	0002
2	Not used	0004
3	1 = Continuous mode	0008
4	1 = Error received	0010
5	1 = Baud Rate range error	0020
6	1 = Not used	0040
7	1 = Filter on	0080
8	1 = Weight conversion complete	0100
9	1 = EEPROM read or write error	0200
10	1 = K-FFP (Fast Frequency Processor) error	0400
11	1 = Ft - temperature frequency out of range	0800
12	1 = Fw - weight frequency out of range	1000
13	1 = Weight window range error	2000
14	1 = Temperature window range error	4000
15	1 = General alarm	8000

Example:

0183= group mode, group leader, filter on, weight conversion complete.

```
Hex ——— 0      1     8     3

Bits ——— 0000  0001  1000  0011

         |                    |
        15                    0
```
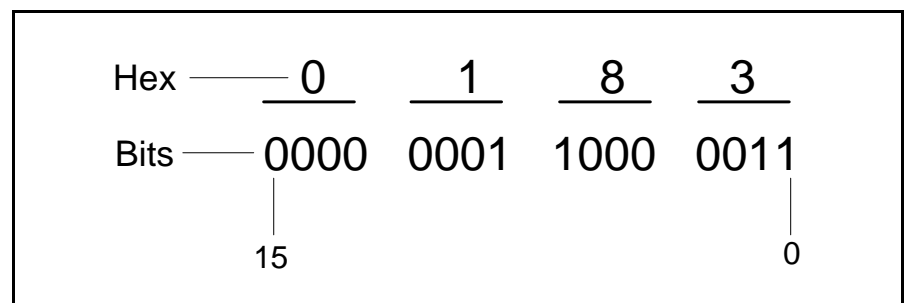
Fig. 2.1   SFT hex codes

2.2   Service variables

This table shows the Service Index which can be entered for Service Variables on page 30. A service technician can enter current values for reference.

Desc	Variable	Feeder Type	Current Value
PreLoad MF=SP	When set to <1> the MF value is preloaded with SP upon KCM starts or large SP changes. When set to <2> the MF will equal Setpoint even in Volumetric mode.	all (not GWB)	
Web UI Function	WebUIFunction = 1: Disables automatic insertion of Web KSU registers in KGR and built-in files. Requires a reset of the KCM to take effect. This would be set to one if a customer absolutely needs data defined in the registers that are normally reserved for web KSU registers. When set to one the web interface virtual KSU will not show data. WebUIFunction = 2: For Ethernet boards, on next KCM power up only, disables the FTP password. This can be used if the FTP password is forgotten for recovery. The Service Variable is set back to 0 after the KCM is reset.	all	
Empty/Jog DC	Value of drive command when emptying the feeder. Default is 70%.	all (not GWB)	
Auto Span Limit	Limit in actual range of the allowed span deviation from 1.000 to allow a auto-span calculation to proceed. Default is 0.98-1.02 or an entry of 2.	all (not GWB)	
Com1 Read	K-Port 1 reads per second; <=100	all	
Com1 Write	K-Port 1 writes per second:<=10	all	
Com1 Err	K-Port 1 error counter:<= 1/hour	all	
Com2 Read	K-Port 2 reads per second:<=100	all	
Com2 Write	K-Port 2 writes per second:<=10	all	
Com2 Err	K-Port 2 error counter:<= 1/hour	all	
Host Read	Host channel reads per second: <=100	all	
Host Write	Host channel writes per second: <=10	all	
Host Err	Host channel error counter: <= 1/hour	all	
IntCh Msgs	Internal channel (SFT/MDU/LDR/Actiflow) messages per second	all	
IntCh Err	Internal channel (SFT/MDU/LDR/Actiflow) error counter	all	
IntCh Load	Internal channel (SFT/MDU/LDR/Actiflow) loading in percent: <= 50%	all	
IntCh Node	Internal channel (SFT/MDU/LDR/Actiflow) last failed node	all	
IntCh Opcode	Internal channel (SFT/MDU/LDR/Actiflow) last opcode	all	
KpromWriteCount	Counter for the write cycles to the Kprom	all	
KCDR-K10S	When set to <1> configures K-Port1 to function with a K-Commander-KCDR, a separate K-Link unit (black box) or KDU using extended software. When this entry is set to <0> K-Port1 returns to its normal function. If <KPORT1 PROT> is set to <KSL> and this entry is set to <1> then K-Port1 baud rate is selectable. When set to <2> then alarms will self clear even the alarm timed out.	all (not GWB)	
Table page 1 of 2			

Desc	Variable	Feeder Type	Current Value
SWUpdateMode	When set to <0>, it means the comm board and all slave devices are allowed to use IAP. When set to <1>, the KCM reload the comm board software on next power up, even if the s/w versions seem the same. When set to <1> and an SFT REPOLL is executed, then the software of all devices connected on the internal serial channel are reloaded regardless of if they have the same version as stored in the KCM. When set to <2>, it inhibits all IAP function.	all	
RefArr Dev Lim	Sets the maximum FF deviation allowed in the refill array. If the FF deviation from Refill Complete to Refill Request is greater than the RefArrDevLim, the limit is used, else the actual FF values are used. Default is 30% deviation.	LWF, LWB	
Modulation%	Shows the percent screw modulation used when <Modulation> selected. When 0%, the modulation effect is zero.	LWF	
PertValueMode	0 = PertValue is displayed in Grams 1 (default) = PertValue is displayed as a% of setpoint. With setpoint=0, pert-value is shown in Grams.	LWF	
MFDispFilter2	If <0>, the massflow display is filtered only by the variable <MF Display Filter>. If <1>, the display is filtered by 1 times more. If <2>, the display is filtered by two times more. etc. Maximum value = 100.	LWF	
VolRate	If set to other than <0>, this will add a variable <BULK DENSITY> to the <PRODUCT CHANGE> menu. After a Auto FF calibration is done, this value will display the volumetric capacity of the feeder.	LWF	
ForceVibAlgo	This allows to interface the AC board to 3rd party vibratory drive. If set to <1> that is used to unhide the menu parameters for the tuning and calib.	LWF	
ScaleRange	Input from the scale range.	LWF	
RefillRepTm	This parameter is zero by default. When 0, the refilling functions are all the same as before. To enable this feature, (auto restart) this new parameter must be set to a non-zero value, such as 60 (seconds) and the refill must be programmed to Auto Terminate. Then, when there is a refill time out and the Net Weight is still below the refill request point, the refill terminates (as normal), but also will start the AutoTerm Refill Repeat Timer. When this AutoTerm Refill Repeat Timer expires, the refill cycle starts over again automatically. This continues until the weight goes at least above the refill request point.	LWF	
SegIndex	Number of 0-63 that follows the belt increment	WBF, WBB	
SelfTune	0 = Off, 1 = On	PID	
Table page 2 of 2			

2.3   PSR Map Global

Bit code	Short Name	Description
0	DBI	Database invalid flag (For internal KCM use only)
1	CVAR	Changed variable present (For internal KCM use only)
2	Run	Motor/machine running
3	Disa	Run disabled by Interlock input or run enable input
4	Ena	Drive output enabled
5	ALS_In	Alarm shutdown input active
6	ALS_Out	Alarm shutdown output active
7	AL_Rel	Alarm relay active
8	Hard_AL	Complement of AL_Rel
9	Soft_AL	On for any alarm present
13	Emptying	Machine is being emptied by Empty function
15	Wait	Feeder received a start command but is waiting
20	Start_OK	Start input will start feeder
21	Started	Started status
22	Kl_init_comp	KLink initialization complete
23	KSU Present	If KSU II is present, bit is set true
24	Setpoint Mode	If set to true, External Setpoint mode is active, else Local SP mode
25	Direct SP Mode	If true and bit 24 is true, then output is in Direct Mode. If bit 24 is true and bit 25 is false, then the SP mode is Ratio
26	Jog Input	Jog Input
27	GRun	Gated Run for Run Signal on digital outputs.
32	HCU_Alarm	HCU / LSR loader alarm
33	HCU_Rec_Full	HCU / LSR receiver is full
34	HCU_Buf_Full	HCU / LSR alarm
35	HCU CommFail	HCU / LSR communication failure to CPU
Table page 1 of 2		

Bit code	Short Name	Description
36	HCU_Loading	HCU / LSR loading status
37	LSR_Running	LSR Run status
40	Hard_interlock	Drive (MDU) hard interlock input status
41	Interlock_In	Interlock input bit status
42	Enable_In	Run enable input bit status
46	Vol_Mode_In	Volumetric input bit status
47	Extern_In	Machine set for External SP bit input
48	Direct_In	Machine set for Direct SP bit input
49	Ext_AI_in	External alarm input bit active
57	SFTCoolOut	SFT cooling output status
64	Disp_Present	KCM-KD display present
65	CPU_Init_cpl	CPU initialization complete
66	Mass_mode	Unit in Grav mode
67	Calib	Currently running an auto calibrate routine
224		Current state of KCM Digital Input #1
225		Current state of KCM Digital Input #2
...		...
239		Current state of KCM Digital Input #16
240		Current state of KCM Digital Output #1
241		Current state of KCM Digital Output #2
...		...
255		Current state of KCM Digital Output #16
Table page 2 of 2		

2.4   PSR Map SFM

Use these additional codes for all SFM flow meters.

Bit code	Short Name	Description
43	BP-Open-In	Bypass valve open input bit status is true
44	BP-Close-In	Bypass valve close input bit status is true
52	Blowoff_Out	Filter blowoff function bit state.
68	Pert	Unit in PERT condition
69	Bypass	Bypass output bit state
71	Unstable	Weight is unstable on SFM

2.5 ASR Map Global

Alarm- number	Short Name	Description
0	Cntr_bd_fail	KCM Hardware error. EEPROM data is corrupt. For example, this message will occur after updating or changing firmware on the KCM.
1	K-Prom_Fail	Checksum error in parameter memory
2	K-Prom_KGR_Fail	Checksum error in kgr file area
3	Power_Glitch	Power dip detected. CPU did not reset
4	Kprom_Write_Count_Exceeded	KPROM write counter exceeds more than 100000 writes.
5	Int_Chan_Fail	Internal channel has failed to communicate between the CPU and the connected devices
6	Gen_Weight_Fail	SFT(s) failed Serial communication to the load cell interrupted f = SFT internal failure. communication OK t = No communication from the SFT to the controller board ?= Not valid answer from SFT
7	Incorrect_Num_SFT	Number of SFTs found during polling does not match that required
8	Bad_SFT_Status	SFT is showing an incorrect status
9	No_MDU_Found	The KCM CPU did not find a motor drive on the internal channel on power-up.
10	MDU_Failure	The KCM CPU lost the motor drive on the internal channel while in operation.
11	MDU_Timeout	Motor drive has lost communication with the KCM CPU and then turns off all digital outputs and shuts of drive power.
12	MDU_Thermal	Drive temperature has been exceeded > 75 deg C. Drive stops.
13	MDU_Speed	No speed feedback signal is present when motor is asked to run. Speed deviation from target $> \pm 5$ rpm Wrong motor voltage programmed.
14	MDU_Current	Motor current limit is exceeded
15	MDU_SRelay	Safety relay disconnected while running
Table page 1 of 4		

Alarm- number	Short Name	Description
16	MDU_General	Dual tach signals connected, one failed. Over-voltage on drive power supply. Motor voltage applied but no speed feedback. Drive temperature > 85 deg. C.
17	MDU_Control	Motor runs uncontrolled. Speed feedback but no motor voltage applied.
18	MDU_EEPROM	EEPROM checksum failed
19	MDU_Drive_Fail	Vibratory drive only. MDU drive pcb has failed. Drive coil current too high.
20	MDU_Polarity	Vibratory drive only. Coil polarity is incorrect on the vibratory drive. Displacement frequency out of range.
21	HCU_Removed	HCU was removed
22	HCU_Alarm	HCU has an alarm
23	HCU_EEPROM	EEPROM failed
24	HCU_Driver	The controller's digital output driver has detected a fault
25	HCU_Supp_Hp	Material is below the level of the supply hopper proximity sensor Sensor failed
26	HCU_Filter_DP	The differential pressure across the filter is too high indicating a clogged filter
27	HCU_CycCount	If P20 Discharge Mode =01"Fill" mode then: Max. numbers of load cycle exceeded, because Buffer Hopper Low input has been active (on) for more than the allowed load cycles. The Buffer Hopper Low signal going inactive clears the load cycle counter If P20 Discharge Mode =02 (LWF) mode then: Discharge Request input has been on for more than the allowed load cycles. The Discharge Request signal going inactive clears the load cycle counter
28	HCU_DischVlv	Discharge valve has failed to either open or close properly. This alarm is automatically disabled in P18 Operating Modes 03 and 04
29	HCU_Rec_Full	Receiver is still full after discharge. Receiver proximity switch too sensitive adjusted or failed
Table page 2 of 4		

Alarm- number	Short Name	Description
30	KLinkWrongFile	Protocol of KGR file does not match that required by the installed communication circuit card
31	KLink_No_File	No KGR file loaded
32	KLink_HPortFail	Host communication pcb error
33	KLink_HPortFail Init	Host communication pcb could not be initialized
34	KLink_HPort_IllegBd	Improper pcb installed in the host port location
35	KLink_KPort Fail	K-Port has failed
36	KLink_KPortFail Init	K-Port communication pcb could not be initialized.
37	KLink_KPort_IllegBd	Host communication pcb is installed on the wrong port location-(K-Port).
38	KLink_BadKGR	One or more feeder parameters are not correct for the specified feeder
39	Ext_IO_Fail	The MODBUS I-O connection has failed
40	External Alarm	Digital input on KCM selected for External Alarm is active
41	Aux_interlock	Hard interlock failed while running
42	Start_Ignored	Start conditions not fulfilled
43	MF_High	The current massflow is above the tolerance entered in <ALARM> menu parameter <MF ERR+>
44	MF_Low	The current massflow is below the tolerance entered in <ALARM> menu parameter <MF ERR->
45	DC_Ceiling	Drive command has reached the limit <DC CEILING>
46	DC_High	The drive command has exceed the value <DRV CMD HI> Limit in the <ALARM> menu
47	DC_Low	The drive command has dropped below the value <DRV CMD LO> Limit in the <ALARM> menu
48	Check_Brush	DC motor brushes may be wearing out and ready to fail.
49	reset_while_running	It is set if the feeder was running before the power down or reset occurred
50	ACF_FAIL	ActiFlow Alarm.
51	ACF_SENSOR	ActiFlow sensor failed.
Table page 3 of 4		

Alarm- number	Short Name	Description
62	Battery_Low	The KCM back-up batteries have failed.
Table page 4 of 4		

2.6   ASR Map SFM

Use these in addition to the global values.

Alarm- number	Short Name	Description
53	Range_Diverter	Diverter channel SFT is out of range.
54	Range_Chute	Chute Channel SFT is out of range.
55	Over_Flow	Rate is above the maximum limit
56	NoFlow	Flow is below the low limit.
57	Valve_failure	Bypass valve has failed
58	WEIGHT_DRIFT	Weight drift

2.7   Parameter listing

Menu	Variable	Value
Home		
	SP	
	MF	
	Drive Cmd-%	
	Motor RPM	
	Total	
Product Change Menu		
	Auto Retare	
	Tare Chute	
	Tare Divert	
	Thresh Chute	
	Thresh Divert	
	Bypass Valve	
	Byp. Interval	
	Span	
Calibration Menu		
	Cal Mode	
	Cal Product Fed	
	Act Product Fed	
	Span	
	Cal Correla	
Calibration Menu	**Cal Corr Limit**	

Menu	Variable	Value
	Cal DC-%	
	Cal Time [sec]	
	A0	
	A1	
	A2	
Alarm Menu		
Limits sub	**Massflow Err (+)-%**	
	Massflow Err (-)-%	
	Drive Cmd Hi-% (	
	Drive Cmd Lo-%	
	Min Flowrate	
	Max Flowrate	
Alarm Menu	**Alarm Delay-sec.**	
Set-up sub		
	Startup Delay-sec.	
	Stops Clrs Alarms	
	ALR Number	
	ALR Mode	
	Stop By:	**Read only**

Menu	Variable	Value
Tuning Menu	**Display Filter**	
	Prop Gain	
	Integral Time	
	Deriv Time	
	MF Filter	
	Sample Time	
	SFT Cutoff Frq	
Scale Menu	**Net Wt Chute**	
General sub		
	Net Wt Divert	
	Gross Wt Chute	
	Gross Wt Divert	
SFT sub	**SFT Required**	
	SFTs	
	SFT Selected	
	SFT Addressed	
	SFT Weight	
	SFT Type	
	SFT Status	
	SFT #	
	SFT SN#	
	SFT Temperature	

Menu	Variable	Value
Machine Menu	**Setpoint Mode**	
General sub		
	Max Setpoint	
	Units	
	Run Time - hours	
	Fdr Address	
	Application	
	Language	
	Screen Saver	
Machine sub	**Feeder Type**	
	Chute Length	
	Chute Angle	
	Blowoff	
Motor sub	**Pickup Teeth**	
	Maximum Motor Speed	
	MDU Status	
	DC Ceiling-%	
Performance sub		
	Internal Channel	
	KCM Temperature	

Menu	Variable	Value
I-O Menu	**CPU1**	
Digital Inputs		
	CPU2	
	CPU3	
	CPU4	
	MDU1	
	MDU2	
	Ext1	
	Ext2	
	Ext3	
	Ext4	
	Ext5	
	Ext6	
	Ext7	
	Ext8	
I-O Menu	**CPU1**	
Digital Outputs		
	CPU2	
	CPU3	
	CPU4	
	MDURelay1	
	MDURelay2	
	MDURelay3	
	Ext1	
	Ext2	

Menu	Variable	Value
I-O Menu Digital Outputs	**Ext3**	
	Ext4	
	Ext5	
	Ext6	
	Ext7	
	Ext8	
	Ext Total Pulse	
	DigiOut Map	
I-O Menu Setpoint sub	**Source**	
	AinValue-%	
	Ain Min-%	
	Ain Max-%	
	Deadband-%	
I-O Menu Analog Out sub	**CPU**	
	Ext1	
	Ext2	
	Ext3	

Menu	Variable	Value
I-O Menu	**Address 80**	
Modbus I-O sub		
	Address 81	
	Address 82	
	Address 83	
HCU Loader	**Refer to 0290023601**	
System Menu		
	Host Prot	
	Host File	
	K-Port 1 Prot	
	Baud Rate	
	K-Port 2 Prot	
	Config Mode	
	SW#	
	HW#	
	MDU#	
	Password	
Security Menu		
	Product Change	
	Calibration	
	Alarm	
	Tuning	

Menu	Variable	Value
Security Menu	**Scale**	
	Machine Set-Up	
	I-O Set-Up	
	HCU Loader	
	System	
	Fdr Being Viewed	
	Tot Key	
	SP Access	
	Vol/Alarm Clear	