

ISN MicroGateway REVISION 8.0 SOFTWARE REFERENCE MANUAL



Table of Contents

Chapter 1	-	Introduction	
Chapter 2	-	Feature List	
Chapter 3	-	Feature 01	- Digital Status
Chapter 4	-	Feature 02	- Analog Value
Chapter 5	-	Feature 03	- System Variable
Chapter 6	-	Feature 04	- Analog Value
Chapter 7	-	Feature 05	- Digital Status
Chapter 8	-	Feature 06	- Digital Status
Chapter 9	-	Feature 07	- Analog Value
Chapter 10	-	Feature 08	- Condition Logic
Chapter 11	-	Feature 09	- Analog Value
Chapter 12	-	Feature 10	- System Calendar
Chapter 13	-	Feature 13	- Look-up Table
Chapter 14	-	Feature 20	- Status LED
Chapter 15	-	Feature 28	- Analog Transfer
Chapter 16	-	Feature 29	- Digital Transfer
Chapter 17	-	Feature 31	- Time Program
Chapter 18	-	Feature 33	- Time Schedule
Chapter 19	-	Feature 39	- Analog Interlock
Chapter 20	-	Feature 40	- Digital Interlock
Chapter 21	-	Feature 45	- Channel Configuration
Chapter 22	-	Feature 46	- Network Status
Chapter 23	-	Feature 48	- Report Configuration
Chapter 24	-	Feature 49	- User Type
Chapter 25	-	Feature 50	- System Diagnostics
Chapter 26	-	Feature 52	- YorkTalk 1
Chapter 27	-	Feature 53	- YorkTalk 3
Chapter 28	-	Feature 54	- YorkTalk 2
Chapter 29	-	Feature 55	- Multiplexing
Chapter 30	-	Feature 56	- De-Multiplexing
Chapter 31	-	Feature 57	- Network Group
Chapter 32	-	Feature 58	- <i>EEProm</i> Set Up
Chapter 33	-	Feature 59	- <i>EEProm</i> Data
Chapter 34	-	Feature 60	- System Structure
Chapter 35	-	Feature 61	- <i>N2</i> Analog Map
Chapter 36	-	Feature 62	- <i>N2</i> Digital Map
Chapter 37	-	Appendix	- Display Menus

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INTRODUCTION

1.1 ISN LANGUAGE OVERVIEW

The ISN MicroGateway offers an enhanced version of the successful **Feature-Section-Page** programming language. By using a simple “fill-in-the-blank” configuration scheme, the user can quickly build applications that avoid syntax errors found in other language types.

Thirty-four different **Features** serve unique functions such as processing data inputs and outputs, executing math, logic and interlock functions, and transferring data to and from other YORK devices. Configured programs may be permanently stored in a non-volatile EE PROM.

1.2 GENERAL ISN SOFTWARE TERMINOLOGY

1.2.1 The Feature, Section, Page Concept

ISN uses a **block programming** methodology called **Feature, Section, Page** or **FSP** concept. **Features** are micro-program structures designed to perform specific tasks such as monitoring, control or management functions.

Some Features have additional **Sections** which allow that Feature to be replicated throughout a given control application. For example, the user has access to 99 Sections of Feature 3. This Feature is called “System Variables” and serves primarily as a mathematical function block. Within a given program, the user may wish to feed several room temperatures into different Sections of Feature 03, as follows:

- A. He may use the first section (F03S01) to output the highest of the temperatures,
- B. The second section (F03S02) may be used to output the lowest of the temperatures.
- C. The third section (F03S03) may be used to output the average of the temperatures.

Chapter 02 of this document listed the MicroGateway Feature List and the appropriate Section count available to each Feature.

Pages are common to all Features. A Page breaks the Feature down into configurable properties. For example, referring the Feature 03 example above, Page 2 allows the user to select whether the math block should select the highest, lowest or average value of the inputs. Using other Pages within the Feature, the user can select which inputs he wishes to be mathematically manipulated. Chapters 3 through 36 detail the Page options for each Feature.

1.2.2 The System Cycle Concept

The ISN software has been arranged to perform a complete sequence of tasks in a infinite loop. Every Feature and Section that has been configured and enabled will be executed once every system cycle. Raw data from the field will be processed once a cycle as will the newly generated data being sent to the field.

The system's control resolution is therefore **one** system cycle. The Micro-Gateway allows selection of either 1 and 2 second cycle times.

1.2.3 Page Structure

Every page within the ISN software consists of fields, which are either generated by the **System** or **User Configured**. Some pages may have only one field while other pages have multiple fields.

1.2.4 Data Entry

Data may be configured into any ISN Feature by using one of the following methods:

- A. ASCII text.
- B. Numerical Values
- C. Options from a predefined MENU.

1.2.5 Configuration

In order to ensure that the application's software operates according to specification, the User must configure the controller in the **HALT** mode. Failure to adhere to this recommendation may result in erratic and unpredictable operations of the system.

1.3 NOTICES

1.3.1 About This Manual

This manual is intended to provide the reader with details relating to the specifics of YORK's ISN programming language. Each Feature is explained as to what purpose it serves, its associated Pages and adjustments that a User is allowed to make.

The manual is limited to dealing only with the language on a feature by feature basis. It does not provide information regarding specific sequences of operation which may be developed when programming actual HVAC applications.

1.3.2 Assumptions

A Terminal Program, typically run from a desktop or Laptop PC, is used to configure the MicroGateway Features set. While it is clear that the reader will use this manual in conjunction with development of MicroGateway applications, it should be pointed out that this guide is a "Technical Manual" as opposed to a "User's Manual". It is not designed primarily for reference use as opposed to being a learning tutorial.

1.3.3 Copyright and Variations

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1.3.5 Document History

The document history shown below defines the revision status of each item included in the ISN Software Revision manual. An updated document history will always accompany any items which have been revised, then published as an update.

Date	Version	Description
Mar 2000	1.2	First Release

FEATURES LIST

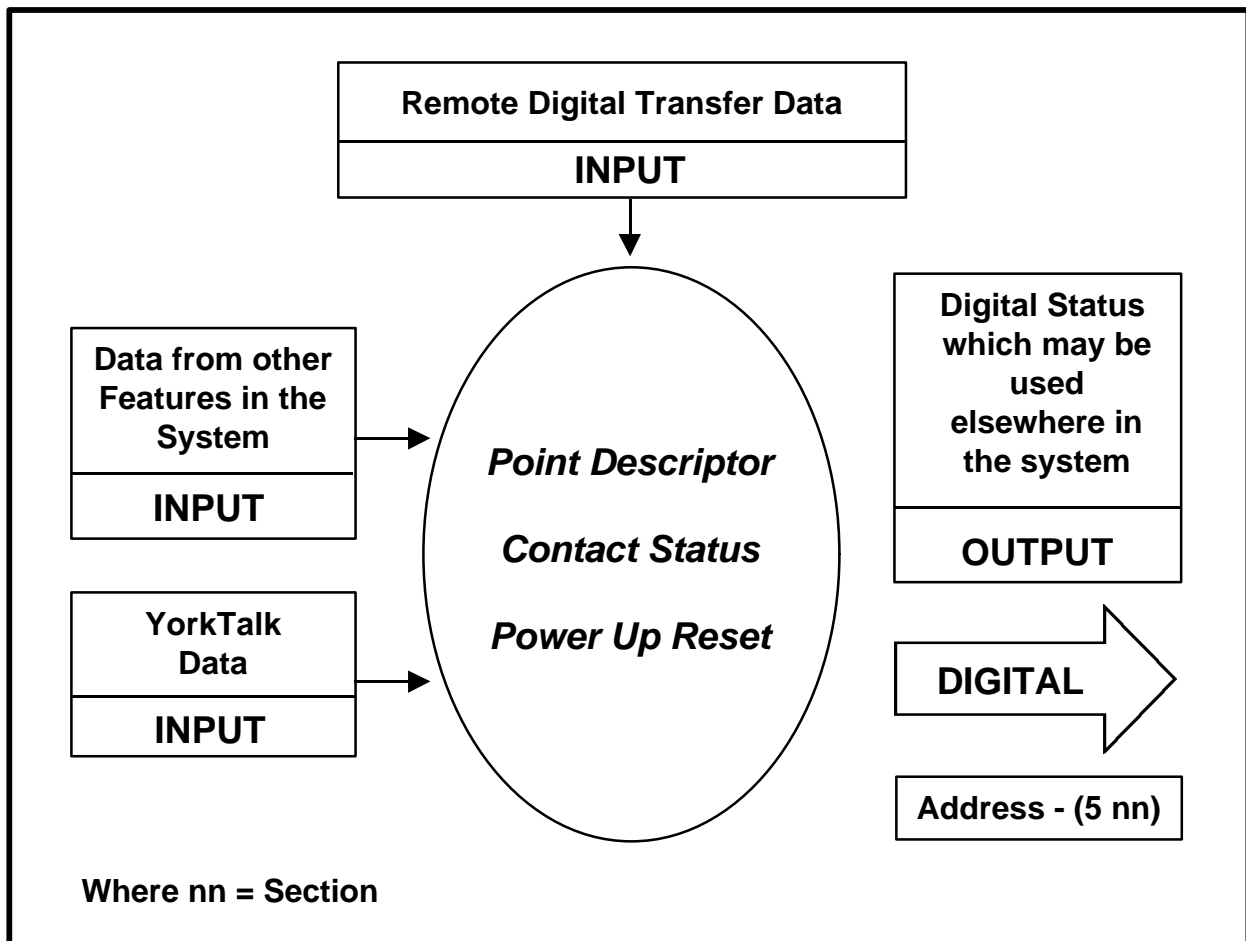
2.1 The following is a list of the Features, Descriptions, Types and Sections available in Revision 8.0 of the ISN MicroGateway.

Feature Number	Feature Description	Type of Feature	Section Count
01	Digital Status	Acquisition	99
02	Analog Value	Acquisition	99
03	System Variable	Acquisition	99
04	Analog Value	Acquisition	99
05	Digital Status	Acquisition	99
06	Digital Status	Acquisition	99
07	Analog Value	Acquisition	99
08	Conditional Logic	Acquisition	99
09	Analog Value	Acquisition	99
10	System Calendar	System	01
13	Look-up Table	Acquisition	08
20	Status LED	User Interface	01
28	Analog Transfer	Communications	84
29	Digital Transfer	Communications	84
31	Time Program	Control	08
33	Time Schedule	Control	04
39	Analog Interlock	Control	99
40	Digital Interlock	Control	99
45	Report Configuration	System	01

46	Network Status	System	01
48	Report Configuration	User Interface	10
49	User Type	User Interface	12
50	System Diagnostics	System	01
52	York Talk 1	Control	01
53	York Talk 3	Control	04
54	York Talk 2	Control	02
55	Multiplexing	Control	08
56	De-Multiplexing	Control	04
57	Network Group	Communications	10
58	EEPROM Set Up	System	20
59	EEPROM Data	System	20
60	System Structure	System	01
61	N2 Analog Map	Communications	01
62	N2 Digital Map	Communications	01

FEATURE 01 – DIGITAL STATUS

3.0 FEATURE F01 – GRAPHIC OVERVIEW OF OPERATION



3.1 FEATURE F01 – DIGITAL STATUS

The Digital Status Feature provides the User with an addressable digital indicator, which can be used to pass status information between Features. Functionally, this Feature can be used to display and store:

- a. Digital status generated by other Features in the system.
- b. Status information received from a remote destination.

The status information is processed by the controller once every system cycle. The Feature provides each indicator with an identifying name. Each Section within the Feature allows the definition of one unique digital indicator.

3.2 TYPE OF FEATURE

Acquisition

3.3 REFERENCE FEATURES

The contact states registered by the Digital Status Feature can be used by the other following Features:

- F03 - System Variable**
- F29 - Digital Transfer**
- F31 - Time Program**
- F33 - Time Schedule**
- F40 - Digital Interlock**
- F48 - Report Configuration**
- F52 - YorkTalk 1**
- F53 - YorkTalk 3**
- F54 - YorkTalk 2**
- F55 - Multiplexing**
- F56 - De-Multiplexing**
- F58 - EEPROM Set Up**
- F62 - N2 Digital Map**

3.4 SECTIONS

F01 DIGITAL STATUS Snn tttttttttt

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At the Section level, the Section being viewed will appear together with the descriptor from Page 01.

3.5 SUMMARY OF PAGES

Page 01	Status Input Descriptor
Page 02	Contact Made State and Open State
Page 03	Signal Source
Page 04	Default State
Page 05	Reset on Power Up

3.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt mmm

t..t Descriptor *User Entered Text or Menu*

Up to 12 characters may be entered to describe each Section. For example: "**CHILLER S/S**" or "**OVERLOAD**".

mmm Current Status *System Generated*

This is the current status of the input point being monitored. The text which describes each state is defined on Page 02.

P02 MADE: mmm OPEN: mmm

mmm Contact Made and Open State *Menu C*

This is the text that is used to describe the state of the input point displayed on Page 01. It defines the text that is displayed when the input is in the "**MADE**" state and the "**OPEN**" state.

P03 SOURCE mmmmmmmmmmm

m..m Data Source

Menu XX

One of the following **six** options must be chosen as described below.

P03 Option 0

P03 SOURCE DUMMY 0 0 0

“**DUMMY**” - This is the status entered on Page 04 and is used as the Feature’s default status. All other fields are unused.

P03 Option 1

P03 SOURCE REMOTE NET nn NODE nn Snn

“**REMOTE**” - A value received from a remote ISN controller.

When configured to “**REMOTE**”, this Feature is capable of receiving data from another controller located on the network.

nn Network, Node, & Section Number of the Data Source.

When a message is received from another controller, it's address (Network Number, Node Number, and origination Section) will be displayed.

P03 Option 2

P03 SOURCE YORK TALK NET nn NODE nn Pnn
--

“**YORKTALK**” - A status is received from *F52*, *F53* or *F54* – *YorkTalk*, via a YorkTalk Network.

nn Network, Node, & Page Number of the Data Source.

The "link" is made in the YorkTalk Features by specifying the Section F01 address to where the data is to be sent.

P03 Option 3

P03 SOURCE DE-MULTPX SECT nn Page 0 0

“**DE-MULTIPLX**” - A value will be displayed from *F56 - De-Multiplexing*.

nn Section Number of the appropriate *F56 – De-Multiplexing*.

P03 Option 4

P03 SOURCE NODE 0 0 0

“**NODE**” - When selected, the status of Switch 8 from the Micro-Gateway Node switch is displayed on Page 01. The User may change this value by manually adjusting the switch on the controller.

Whenever Switch 8 is adjusted, the new value will be automatically displayed on Page 01. (A delay of several seconds may be experienced).

P03 Option 5

P03 SOURCE SYSTEM 0 0 0

“**SYSTEM**” - A value which is received from the output of other certain Features.

Included Features are:

- F31 - Time Program**
- F39 - Analog Interlock**
- F40 - Digital Interlock**
- F46 - Network Status**
- F52 - York Talk 1**
- F53 - York Talk 3**
- F54 - York Talk 4**

These Features must specify “**F01**” and its appropriate Section. Likewise, Page 03 of F01 **must** be set to “**SYSTEM**” for the coupling to take effect.

P04 DEFAULT STATE mmmm*m..m* Default Contact State*Menu D*

When the Signal Source on Page 3 is set to “**DUMMY**”, this Page selects the Default Value and displays it on Page 01.

However, if Page 03 is set to either “**YORKTALK**” or “**REMOTE**”, when power is initially applied, or the system is switched from the “**HALT**” to the “**RUN**” mode, the value chosen as default will be used until receipt of “**REMOTE**” or “**YORKTALK**” data, is received.

P05 RESET ON POWER UP mmmm*m..m* Reset Request*Menu N*

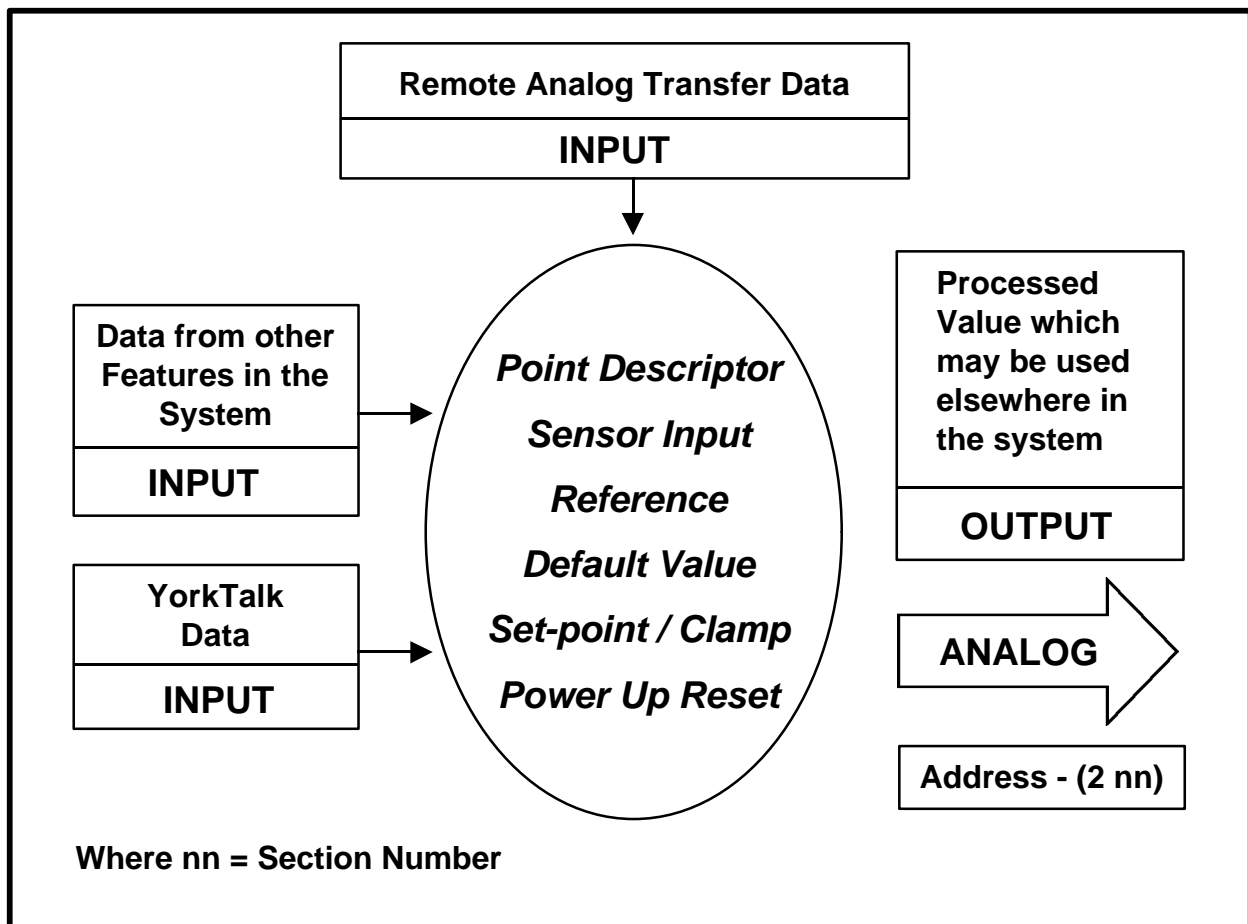
This Page applies only if the source is set to “**REMOTE**” or “**YORKTALK**”. It is used to determine what status should be displayed on Page 01 after a power failure.

If “**NO**” is configured, the status prior to power failure is retained.

If “**YES**” is configured, the default status on Page 04 is used.

FEATURE 02 – ANALOG VALUE

4.0 FEATURE F02 – GRAPHIC OVERVIEW OF OPERATION



4.1 FEATURES F02 - ANALOG VALUE

The Analog Value Feature provides the User with an addressable analog variable, which can be used to pass data between Features.

Functionally, this Feature can be used to display and store:

- a. Analog values generated by other Features in the system.
- b. Data received from a remote destination.

New values are registered by the controller once every system cycle. The Feature provides each variable with an identifying name and an engineering unit of measure. Each Section within the Feature allows the definition of one unique analog variable.

4.2 TYPE OF FEATURES

Acquisition

4.3 REFERENCE FEATURES

The values registered by the Analog Value Feature can be used by the following Features:

F03 - System Variables
F13 - Look-up Table
F20 - Status LED
F28 - Analog Transfer
F39 - Analog Interlock
F48 - Report Configuration
F52 - YorkTalk 1
F53 - YorkTalk 3
F54 - YorkTalk 2
F55 - Multiplexing
F56 - De-Multiplexing
F58 - EEPROM Set Up
F61 - N2 Analog Map

4.4 SECTIONS

F02 ANALOG VALUE Snn tttttttttt
--

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At Section level, the Section being viewed will appear together with the descriptor from Page 01.

4.5 SUMMARY OF PAGES

Page 01	Analog Input Descriptor
Page 02	Reserved
Page 03	Reserved
Page 04	Signal Source
Page 05	Default Value
Page 06	Reset on Power Up
Page 07	Setpoint Min and Max Limits
Page 08	Setpoint Value

4.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01	tttttttttt	vvvvvv	0.0 mmm
------------	-------------------	---------------	----------------

t..t Descriptor *User Entered Text or Menu*

Up to 12 characters may be entered to describe each Section. For example: "**OUTSIDE-AIR**" or "**HW-TEMP**".

v..v Current Value *System Generated*

This is the current value of the analog variable.

mmm Engineering Units *User Selected Menu A*

P02 RESERVED

P03 RESERVED

P04 SOURCE mmmmmmmmmmm

m..m Data Source

Menu WW

One of the following **eleven** options must be chosen, as described below.

P04 Option 0

P04 SOURCE DUMMY 0 0 0

“**DUMMY**” - This is a value entered on Page 05 and is used as the Feature’s default input. All other fields are unused.

P04 Option 1

P04 SOURCE REMOTE NET nn NODE nn Snn

“**REMOTE**” - A value received from a remote ISN device.

When configured to “**REMOTE**”, this Feature is capable of receiving data from another controller located remotely on the network.

nn Network, Node & Section Number of the Data Source.

When a message is received from another controller, it’s address (network number, node number and originating Section) will be displayed.

P04 Option 2

P04 SOURCE YORK TALK NET nn NODE nn Pnn
--

“**YORKTALK**” - A value is received from *F52, F53 or F54* - *YorkTalk* via a YorkTalk network.

nn Network, Node & Page Number of the Data Source.

The "link" is made in the YorkTalk Features by specifying the F02 Section address to where the data is sent.

P04 Option 3

P04 SOURCE TIME 0 0 0

“**TIME**” - A value received from *F10 - System Calendar*.

P04 Option 4

P04 SOURCE DATE 0 0 0

“**DATE**” - A value received from *F10 - System Calendar*. The date will be displayed as a 4 digit value. The first two digits denote the day of the month, the last two digits denote the month.

For example: **1211 = 12th November**

P04 Option 5

P04 SOURCE DAY-TYPE 0 0 0

“**DAY-TYPE**” - A value received from *F10 - System Calendar* will be displayed as a single digit value representing the day of the week.

- 1 = Monday**
- 2 = Tuesday**
- 3 = Wednesday**
- 4 = Thursday**
- 5 = Friday**
- 6 = Saturday**
- 7 = Sunday**

P04 Option 6

P04 SOURCE NXT START FEAT nn SECT nn 0
--

“**NXT START**” - This is a value representing the next start time. It is selected from *F33 - Time Schedule*.

The "link" is made in *F33* by specifying the F02 Section address to where the data is sent.

When the **first** start time has been reached, the value on this Page will be maintained until midnight for a **single** start per day.

For **multiple** starts per day, this value will be updated with the next start time for the given day after the first stop time has been reached.

This process will continue until the last start time for the day has been reached. This value will then be maintained until midnight. If the following day has **no** start time specified, the value will be reset to zero at midnight.

nn Defines the Feature and Section Number of the Source.

P04 Option 7

P04 SOURCE NXT STOP FEAT nn SECT nn 0

“**NEXT STOP**” - This is a value representing the next stop time. It is selected from *F33 - Time Schedule*.

The "link" is made in *F33* by specifying the F02 Section address to where the data is sent.

When the **first** stop time has been reached, the value on this Page will be maintained until midnight for a single start per day. For **multiple** starts per day this value will be updated with the next stop time for the given day, after the second start time has been reached. This process will continue until the last stop time for the day is reached. The value will then be maintained until midnight. If the following day has **no** stop time specified the value will be reset to zero at midnight.

nn Defines the Feature and Section Number of the Source.

P04 Option 8

P04 SOURCE MULTIPLEX SECT nn 0 0

“**MULTIPLEX**” - A value received from the *F55 - Multiplexing Feature* will be displayed.

nn Section Number of the appropriate *F55 – Multiplexing Feature*.

P04 Option 9

P04 SOURCE SETPOINT 0 0 0

“**SETPOINT**” - The value configured in Page 08 will be displayed on Page 01. This value is compared to the **minimum** and **maximum** values as entered on Page 07. If it is outside this range it will automatically be clamped to either the **minimum** or **maximum** value, whichever is the more appropriate.

P04 Option 10

P04 SOURCE NODE NUM 0 0 0

“**NODE NUM**” - When selected, the controller’s Node address is displayed on Page 01. The User may change this value by adjusting the Node switch on the hardware.

Whenever the Node switch is adjusted, the new value will be automatically displayed on Page 01. (A delay of several seconds may be experienced).

P05 DEFAULT VALUE vvvvvv

v..v Default Value

-999.9 to 9999.9

This Page is used to select the **default value** on Page 01 if the signal source is set to “**DUMMY**”. If Page 04 is set to either “**YORKTALK**” or “**REMOTE**” then when power is initially applied and the system is switched from the “**HALT**” to “**RUN**” mode, the **default value** will be used until receipt of “**REMOTE**” or “**YORKTALK**” data.

P06 RESET ON POWERUP mmm*mmm* Reset Request*Menu N*

This Page is used whenever the source is set to "**REMOTE**" or "**YORKTALK**". It is used to determine what value should be displayed on Page 01 after a power failure.

If "**NO**" is configured then the value prior to the power failure will be retained.

If "**YES**" is configured then the default value on P05 will be used.

P07 SETPOINT MIN vvvvvv MAX vvvvvv*v..v* Setpoint Minimum*-999.9 to 9999.9*

This is the value entered into the "**MIN**" field which defines the **lowest** value of the Setpoint which can be entered on Page 08.

If the User enters a value **lower** than the "**Min**", the actual value "rolls up" to the **minimum** value.

v..v Setpoint Maximum*-999.9 to 9999.9*

This is the value entered into the "**MAX**" field which defines the **highest** value of the Setpoint which can be entered on Page 08.

If the User enters a value **higher** than the "**MAX**", the actual value "falls back" to the **maximum** value.

Both the "**MIN**" and "**MAX**" fields must be configured for setpoint value to operate correctly. If the "**MIN**" and "**MAX**" fields remain **unconfigured**, the full Setpoint range on P08 is available.

P08 SETPOINT vvvvvv

v..v Setpoint

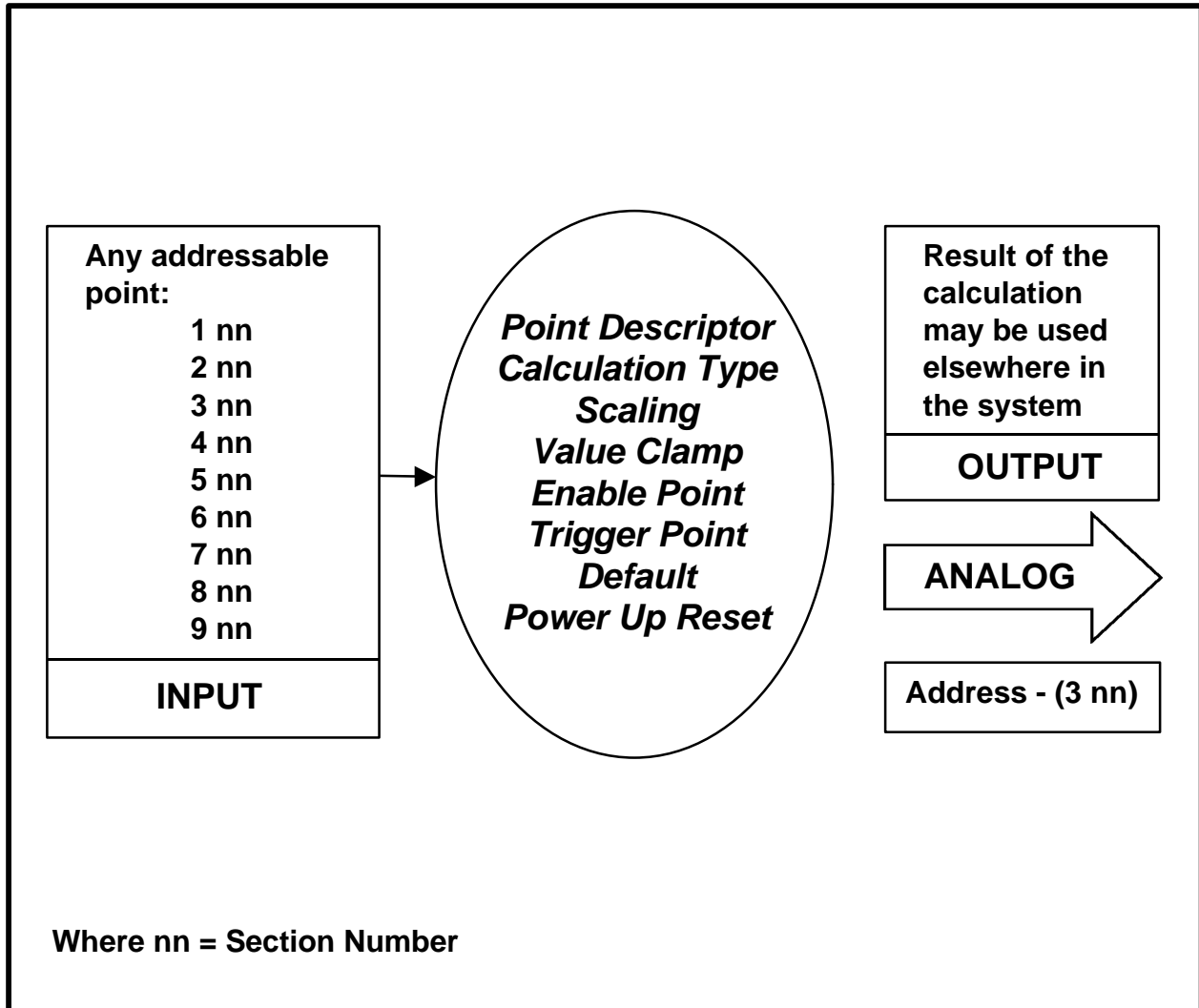
-999.9 to 9999.9

This value represents the **Setpoint**. It is User configurable and will be displayed on Page 01 if the source has been selected to “**SETPOINT**” and the configured value is within the limits defined on Page 07.

The **Setpoint** is subject to the clamp specified on Page 07. This limits the value of the Setpoint entered by the End User..

FEATURE 03 – SYSTEM VARIABLE

5.0 FEATURE 03 – GRAPHIC OVERVIEW OF OPERATION



5.1 FEATURE 03 – SYSTEM VARIABLE

The System Variable Feature provides the User with a tool to perform simple mathematical computations. Operands are considered to be the majority of the addressable Features, i.e. F01 through F09. The inclusion of F01, F05 and F06 in this list enables **boolean inputs** to be included into standard calculations. With the inclusion of F08, conditional logic is also available.

This Feature is able to determine a mathematical result by performing a User defined calculation on one or more inputs.

Using multiple Sections, the result of one calculation can be used as an input to another calculation. External events may be used to hold the value or reset it to a pre-defined default.

The mathematical expressions are processed by the controller once every system cycle. The Feature provides each calculated variable with an identifying name and an engineering unit of measure.

Each Section within the Feature allows the definition of one calculated system variable.

Any of the following mathematical operations can be used.

Arithmetic Calculations

Average

Highest

2nd Highest

3rd Highest

Lowest

Square Root

Sliding Time Average

Look-up Table

5.2 TYPE OF FEATURE

Acquisition

5.3 REFERENCE FEATURES

The values held in Sections of the following Features can be used as input for the computations:

F01 - Digital Status
F02 - Analog Value
F03 - System Variable
F04 - Analog Value
F05 - Digital Status
F06 - Digital Status
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

The following Features can use the values calculated:

F03 - System Variable
F13 - Look-up Table
F20 - Status LED
F33 - Time Schedule
F39 - Analog Interlock
F48 - Report Configuration
F52 - YorkTalk 1
F53 - YorkTalk 3
F54 - YorkTalk 2
F56 - De-Multiplexing
F58 - EEPROM Set Up
F61 - N2 Analog Map

5.4 SECTIONS

F03 SYSTEM VARIABLES Snn tttttttttt
--

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At the Section level, the Section being viewed will appear in the top display together with the descriptor from Page 01.

5.5 SUMMARY OF PAGES

Page 01	Calculation Descriptor
Page 02	Type of Calculation
Page 03	Scale Divisor
Page 04	Offset
Page 05	Look-up Table Section
Page 06	Minimum and Maximum Calculated Value
Page 07 to 10	Input Identifier
Page 11	Enable Address
Page 12	Enable Mode
Page 13	Trigger Point
Page 14	Reset on Power Up
Page 15	Default Value

5.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt vvvvvv 0.0mmm

t..t Descriptor *User Entered Text or Menu*

Up to **12 characters** can be entered which can describe the Calculation; for example "FLOW-CALC1".

v..v Current Calculated Value *System Generated*

This is the value currently being generated from the calculation.

m..m Engineering Units *Menu A*

P02 mmmmmmmmmmm m000m000mmm000m000m

m..m Type of Calculation *Menu P*

The following **nine** types of calculation are available:

(**n** represents the number of inputs.)

-
- P02 - Option 0** **Calculation** – Arithmetic Calculation and Parenthesis.
- P02 - Option 1** **Average** - When selected, this operator will calculate the average value of **n** configured inputs, using the relationship defined below.
- $$V_{avg\ n} = \text{SUM}(I_1 \text{ ---} I_n) / n$$
- (**n** being less or equal to 4)
- P02 - Option 2** **Highest** - When configured, this operator will select the highest value with **n** inputs being configured.
- (**n** being less or equal to 4)
- P02 - Option 3** **2nd Highest** - When configured, this operator will select the 2nd highest value with **n** inputs being configured.
- (**n** must be a minimum of 2 and less or equal to 4)
- P02 - Option 4** **3rd Highest** - When configured, this operator will select the 3rd highest value with **n** inputs being configured.
- (**n** must be a minimum of 3 and less or equal to 4)
- P02 - Option 5** **Lowest** - When configured, this operator will select the lowest value with **n** inputs being configured.
- (**n** must be less or equal to 4)
- P02 - Option 6** **Square Root** - When configured, this operator will calculate the square root of the result of any calculation, being performed on the defined inputs.
- $$V_{\text{sqrt}} = (A \text{ OP } B \text{ OP } C \text{ OP } D)^{1/2}$$
- Where **OP** is any one of the arithmetic operators.
- The square root of a negative number will not be calculated. (The result will be **zero**).

P02 - Option 7 Sld Time Average - When configured, this operator will produce a sliding time average of the first three configured inputs, i.e. Inputs A, B and C. Input D is used to set the time interval, over which the average is to be calculated.

It should be noted that the time average value will not be current until one full time period has elapsed.

If “**RESET**” on “**POWER UP**” is set to “**NO**” then the calculation will retain the last known value and continue to calculate the average using this data.

$$V \text{ savg } n = V \text{ savg } n-1 + (ts/t \text{ int}) * (Yn - V \text{ savg } n-1)$$

Where:

$V \text{ savg } n$ = Current value of the sliding average.

$V \text{ savg } n-1$ = Value of the sliding average at the last system cycle.

ts = System cycle time in seconds.

$t \text{ int}$ = The time interval in seconds over which the average is calculated. This value is determined from Input D.

Yn = This is the current value, i.e. the sum of the values of Inputs A, B and C.

The time interval over which the average value is calculated is entered on Page 10, Input D. This requires that the time interval should be configured in a Feature that qualifies as a valid input.

Select From:

- F01 - Digital Status**
- F02 - Analog Value**
- F03 - System Variable**
- F04 - Analog Value**
- F05 - Digital Status**
- F06 - Digital Status**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

P02 - Option 8 LOOK UP TABLE - Selection of Look-up Table Section number, places the output value from any chosen section of Feature 13 into Input D, Page 10. The other 3 inputs will not affect the result. However, the value of this Section of F03 may be used as an input to other Sections of F03.

Arithmetic Calculations and Parenthesis

Any mathematical calculation can be applied to the inputs specified on Pages 06 to 09.

m..m Mathematical Operators

Menu ZZ / Menu EE

The following types of operators are available:

Addition	+
Subtraction	-
Multiplication	*
Division	/
Parenthesis	(

The mathematical operators can be applied to the inputs as specified on Pages 07 to 10.

The configured inputs may be either analog or digital; if a digital point is configured, then it will present a value of **1** when in the “**MADE**” state, and a value of **0** when in the “**OPEN**” state.

The last configurable menu field (on Page 02) is the parenthesis. It provides the User with the option of determining the order of precedence, i.e. the order in which the calculation should be executed.

Two options exist: Evaluation in order of occurrence (default), or the precedence of the calculation being determined by parenthesis. The format of a calculation performed is shown in the following examples: **a.** by occurrence, and **b.** using parenthesis.

- a. (((A n B) n C) n D)**
- b. (A n B) n (C n D)**

Parenthesis works only for **Calculation** and **Square Root** selections.

DO NOT use the parenthesis unless the first three fields (A, B, and C) are configured. Otherwise, the data will be calculated in unpredictable erratic fashion, resulting in system overload, or even in locking up any terminal interfaces linked to the controller.

P03 SCALE DIVISOR vvvvvv

v..v Scale Divisor -999.9 to 9999.9

The Scale Divisor is used to magnify or decrease the value generated by the calculation defined on Page 02.

Value on Page 1 = (Result of calculation or the Value held by any Input) / Scale Divisor.

If the Scale Divisor is set to a number **greater** than 1, the value on Page 01 will be reduced. If it is set to a number **less** than 1, it will be increased.

If this Page is **not** configured, then the scale divisor is considered to be 1, and will not affect the calculation results.

P04 OFFSET vvvvvv

v..v Offset -999.9 to 9999.9

After the math function as defined on Page 02 has been performed on the inputs, followed by the Scale Divisor being applied, an offset value is added to, or subtracted from the result.

Value on Page 1 = ((Result of calculation, or the Value held by any Input) / Scale Divisor) + Offset

If this page is not configured then the Offset is considered to be 0 and will not affect the calculation.

P05 LOOK-UP TABLE mm

mm Section Number

Menu SS

This places the output value of the selected section of Feature 13 into Input D. Additional calculations on Page 2 will not be performed, so any inputs on Pages 7, 8 and 9 will be ignored. However, Offset, Scale Divisor, and Min/Max Pages 3, 4 and 6 will still apply, as will any configurations on Pages 11, 12, 13 and 14.

P06 MINIMUM vvvvvv MAXIMUM vvvvvv
--

Calculation Range

v..v Minimum Calculation Value -999.9 to 9999.9

This is the **lowest** value, which the calculated result on Page 01 will be allowed to fall to.

v..v Maximum Calculated Value -999.9 to 9999.9

This is the **highest** value, which the calculated result on Page 01 will be allowed to rise to.

Any one of these two fields being configured will activate this clamp. If neither field is configured **NO** clamping will take place.

If **minimum** is configured, the **maximum** must also be configured as the **higher** value before clamping can take place.

Pnn INPUT n sss tttttttttt vvvvvv
--

Input Address

nn Page Number (07 to 10) *System Generated*

Up to **four** inputs can be used in a calculation. An individual Page is used to hold the address of each input used.

n Input Number (A, B, C or D) *System Generated*

sss Input Address *User entered*

One of the following addresses must be selected as an input to the calculation.

Select From:

- F01 - Digital Status**
- F02 - Analog Value**
- F03 - System Variable**
- F04 - Analog Value**
- F05 - Digital Status**
- F06 - Digital Status**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

t..t Descriptor *System Generated*

This is the Page 01 descriptor which is associated with the point specified.

v..v Input Value *System Generated*

This is the value of the point specified.

F01, F05 and F06 will show a value of "1" or "0" depending on status, "MADE" or "OPEN", respectively.

P11 ENABLE POINT sss tttttttttt
--

sss Enable Address

User Entered

This field is used to specify the address of a digital point, which will determine if the calculated value generated by this Section will equal the **default**, the **minimum/maximum value** as specified on Page 06, or contain a **result**.

The calculated value will contain a result when the status chosen in Page 12 is active.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor

System Generated

This is the Page 01 descriptor which is associated with the point specified.

The Enable point has precedence over the operation of the Trigger point.

P12 ENABLED = mmmm

m..m Enable Mode Status

Menu D

This is the **status**, which must be indicated by the digital point to enable a value to be calculated.

When the point specified is **equal** to this state, the calculation is allowed to run. When the point specified is not **equal** to this state, the calculation will equal the **default value**.

If no ENABLE point is defined on Page 11, then this state must be configured to **“MADE”** in order for this Section to function.

P13 TRIGGER POINT sss tttttttttt

sss Trigger Address *User Entered*

This field is used to specify the address of a digital point, which will cause the calculated value to "freeze" when in the **OPEN** state. When in the **MADE** state the calculation will run. The facility can hold a value for a period of time and then allow the calculation to continue from the value at which it was held.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor *System Generated*

This is the Page 01 descriptor which is associated with the point specified.

P14 RESET ON POWER UP mmm

mmm Reset On Power Up *Menu N*

The following options are available:

NO - This will cause the value of the calculation to be stored during a power failure for use at power up.

YES - This will cause the value of the calculation to be lost during a power failure. The calculation will restart the **default** value, the **minimum**, or the **maximum** value, whichever is applicable.

P15 DEFAULT vvvvvv

v..v Default Value

0 to 9999.9

This Page is used to provide the Feature with a value so that it may be used by other Features in the system until a calculation has been performed. This is very useful when the calculation is disabled or after power restoration if Page 14 is set to **YES**.

On power up, the **default** value is subject to **minimum** and **maximum** values as defined on Page 06.

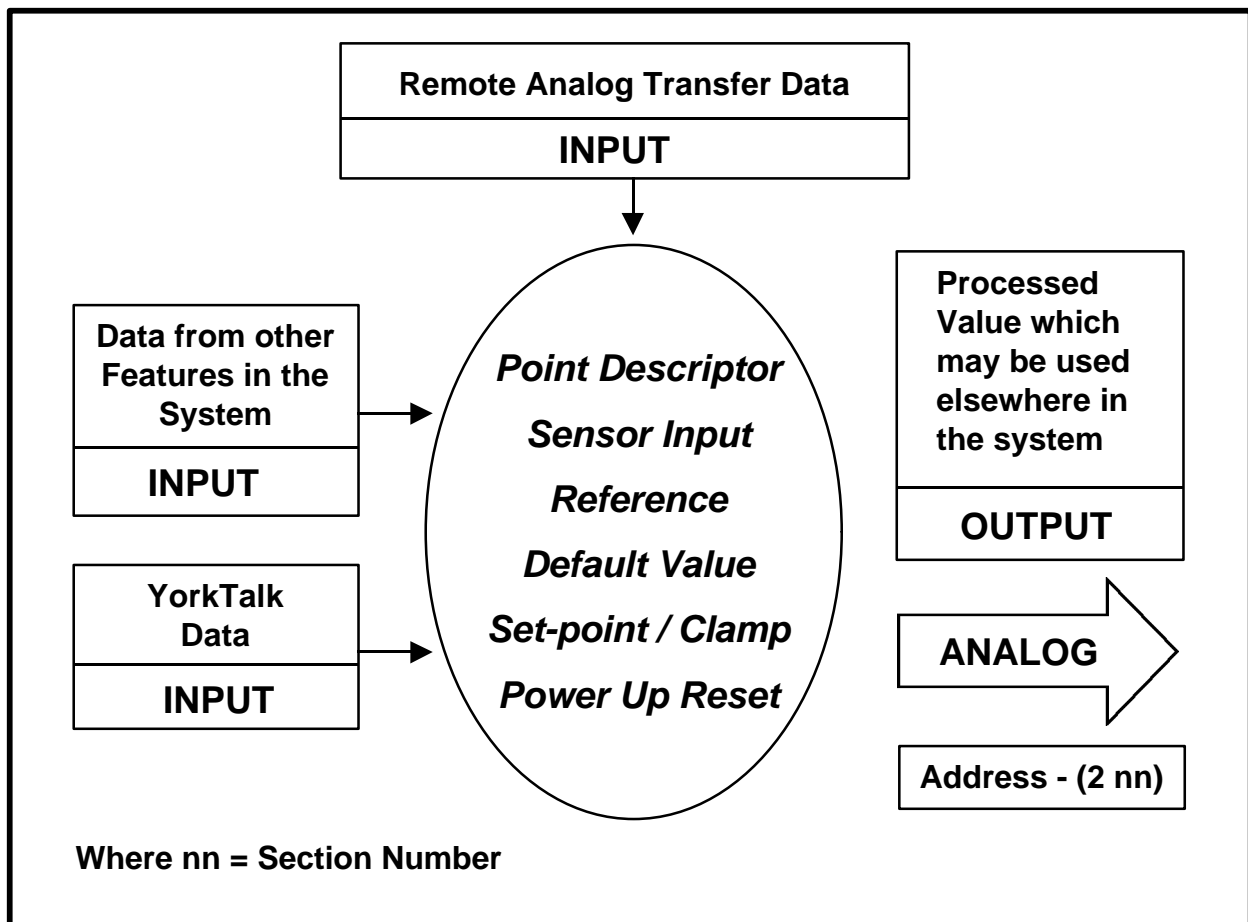
For example, if the **default** is set to **2** and the minimum value is **10** then the value used by this Section will be **10**.

During normal system operations, the **minimum** and **maximum** values apply to the **default** value.

If **NO Enable** point is specified on Page 11, the state on Page 12 must be configured as **OPEN** in order for the **default** value to take effect.

FEATURE 04 – ANALOG VALUE

6.0 FEATURE F04 – GRAPHIC OVERVIEW OF OPERATION



6.1 FEATURES F04 - ANALOG VALUE

The Analog Value Feature provides the User with an addressable analog variable, which can be used to pass data between Features.

Functionally, this Feature can be used to display and store:

- a. Analog values generated by other Features in the system.
- b. Data received from a remote destination.

New values are registered by the controller once every system cycle. The Feature provides each variable with an identifying name and an engineering unit of measure. Each Section within the Feature allows the definition of one unique analog variable.

6.2 TYPE OF FEATURES

Acquisition

6.3 REFERENCE FEATURES

The values registered by the Analog Value Feature can be used by the following Features:

F03 - System Variables
F13 - Look-up Table
F20 - Status LED
F28 - Analog Transfer
F39 - Analog Interlock
F48 - Report Configuration
F52 - YorkTalk 1
F53 - YorkTalk 3
F54 - YorkTalk 2
F55 - Multiplexing
F56 - De-Multiplexing
F58 - EEPROM Set Up
F61 - N2 Analog Map

6.4 SECTIONS

F04 ANALOG VALUE Snn tttttttttt
--

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At Section level, the Section being viewed will appear together with the descriptor from Page 01.

6.5 SUMMARY OF PAGES

Page 01	Analog Input Descriptor
Page 02	Reserved
Page 03	Reserved
Page 04	Signal Source
Page 05	Default Value
Page 06	Reset on Power Up
Page 07	Setpoint Min and Max Limits
Page 08	Setpoint Value

6.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01	tttttttttt	vvvvvv	0.0	mmm
------------	-------------------	---------------	------------	------------

t..t Descriptor *User Entered Text or Menu*

Up to 12 characters may be entered to describe each Section. For example: "**OUTSIDE-AIR**" or "**HW-TEMP**".

v..v Current Value *System Generated*

This is the current value of the analog variable.

mmm Engineering Units *User Selected Menu A*

P02 RESERVED

P03 RESERVED

P04 SOURCE mmmmmmmmmmmmm

m..m Data Source

Menu WW

One of the following **ten** options must be chosen, as described below.

P04 Option 0

P04 SOURCE DUMMY 0 0 0

“**DUMMY**” - This is a value entered on Page 05 and is used as the Feature’s default input. All other fields are unused.

P04 Option 1

P04 SOURCE REMOTE NET nn NODE nn Snn

“**REMOTE**” - A value received from a remote ISN device.

When configured to “**REMOTE**”, this Feature is capable of receiving data from another controller located remotely on the network.

nn Network, Node & Section Number of the Data Source.

When a message is received from another controller, it’s address (network number, node number and originating Section) will be displayed.

P04 Option 2

P04 SOURCE YORK TALK NET nn NODE nn Pnn

“**YORKTALK**” - A value is received from *F52, F53 or F54* - *YorkTalk* via a YorkTalk network.

nn Network, Node & Page Number of the Data Source.

The "link" is made in the YorkTalk Features by specifying the F04 Section address to where the data is sent.

P04 Option 3

P04 SOURCE TIME 0 0 0

“**TIME**” - A value received from *F10 - System Calendar*.

P04 Option 4

P04 SOURCE DATE 0 0 0

“**DATE**” - A value received from *F10 - System Calendar*. The date will be displayed as a 4 digit value. The first two digits denote the day of the month, the last two digits denote the month.

For example: **1211 = 12th November**

P04 Option 5

P04 SOURCE DAY-TYPE 0 0 0

“**DAY-TYPE**” - A value received from *F10 - System Calendar* will be displayed as a single digit value representing the day of the week.

- 1 = Monday**
- 2 = Tuesday**
- 3 = Wednesday**
- 4 = Thursday**
- 5 = Friday**
- 6 = Saturday**
- 7 = Sunday**

P04 Option 6

P04 SOURCE NXT START FEAT nn SECT nn 0
--

“**NXT START**” - This is a value representing the next start time. It is selected from *F33 - Time Schedule*.

The "link" is made in *F33* by specifying the F04 Section address to where the data is sent.

When the **first** start time has been reached, the value on this Page will be maintained until midnight for a **single** start per day.

For **multiple** starts per day, this value will be updated with the next start time for the given day after the first stop time has been reached.

This process will continue until the last start time for the day has been reached. This value will then be maintained until midnight. If the following day has **no** start time specified, the value will be reset to zero at midnight.

nn Defines the Feature and Section Number of the Source.

P04 Option 7

P04 SOURCE NXT STOP FEAT nn SECT nn 0

“**NEXT STOP**” - This is a value representing the next stop time. It is selected from *F33 - Time Schedule*.

The "link" is made in *F33* by specifying the F04 Section address to where the data is sent.

When the **first** stop time has been reached, the value on this Page will be maintained until midnight for a single start per day. For **multiple** starts per day this value will be updated with the next stop time for the given day, after the second start time has been reached. This process will continue until the last stop time for the day is reached. The value will then be maintained until midnight. If the following day has **no** stop time specified the value will be reset to zero at midnight.

nn Defines the Feature and Section Number of the Source.

P04 Option 8

P04 SOURCE MULTIPLEX SECT nn 0 0

“**MULTIPLEX**” - A value received from the *F55 - Multiplexing Feature* will be displayed.

nn Section Number of the appropriate *F55 - Multiplexing Feature*.

P04 Option 9

P04 SOURCE SETPOINT 0 0 0

“**SETPOINT**” - The value configured in Page 08 will be displayed on Page 01. This value is compared to the **minimum** and **maximum** values as entered on Page 07. If it is outside this range it will automatically be clamped to either the **minimum** or **maximum** value, whichever is the more appropriate.

P04 Option 10

P04 SOURCE NODE NUM 0 0 0

“**NODE NUM**” - When selected, the controller’s Node address is displayed on Page 01. The User may change this value by adjusting the Node switch on the hardware.

Whenever the Node switch is adjusted, the new value will be automatically displayed on Page 01. (A delay of several seconds may be experienced).

P05 DEFAULT VALUE vvvvvv

v..v Default Value

-999.9 to 9999.9

This Page is used to select the **default value** on Page 01 if the signal source is set to “**DUMMY**”. If Page 04 is set to either “**YORKTALK**” or “**REMOTE**” then when power is initially applied and the system is switched from the “**HALT**” to “**RUN**” mode, the **default value** will be used until receipt of “**REMOTE**” or “**YORKTALK**” data.

P06 RESET ON POWERUP mmm*mmm* Reset Request*Menu N*

This Page is used whenever the source is set to "**REMOTE**" or "**YORKTALK**". It is used to determine what value should be displayed on Page 01 after a power failure.

If "**NO**" is configured then the value prior to the power failure will be retained.

If "**YES**" is configured then the default value on P05 will be used.

P07 SETPOINT MIN vvvvvv MAX vvvvvv*v..v* Setpoint Minimum*-999.9 to 9999.9*

This is the value entered into the "**MIN**" field which defines the **lowest** value of the Setpoint which can be entered on Page 08.

If the User enters a value **lower** than the "**Min**", the actual value "rolls up" to the **minimum** value.

v..v Setpoint Maximum*-999.9 to 9999.9*

This is the value entered into the "**MAX**" field which defines the **highest** value of the Setpoint which can be entered on Page 08.

If the User enters a value **higher** than the "**MAX**", the actual value "falls back" to the **maximum** value.

Both the "**MIN**" and "**MAX**" fields must be configured for setpoint value to operate correctly. If the "**MIN**" and "**MAX**" fields remain **unconfigured**, the full Setpoint range on P08 is available.

P08 SETPOINT vvvvvv

v..v Setpoint

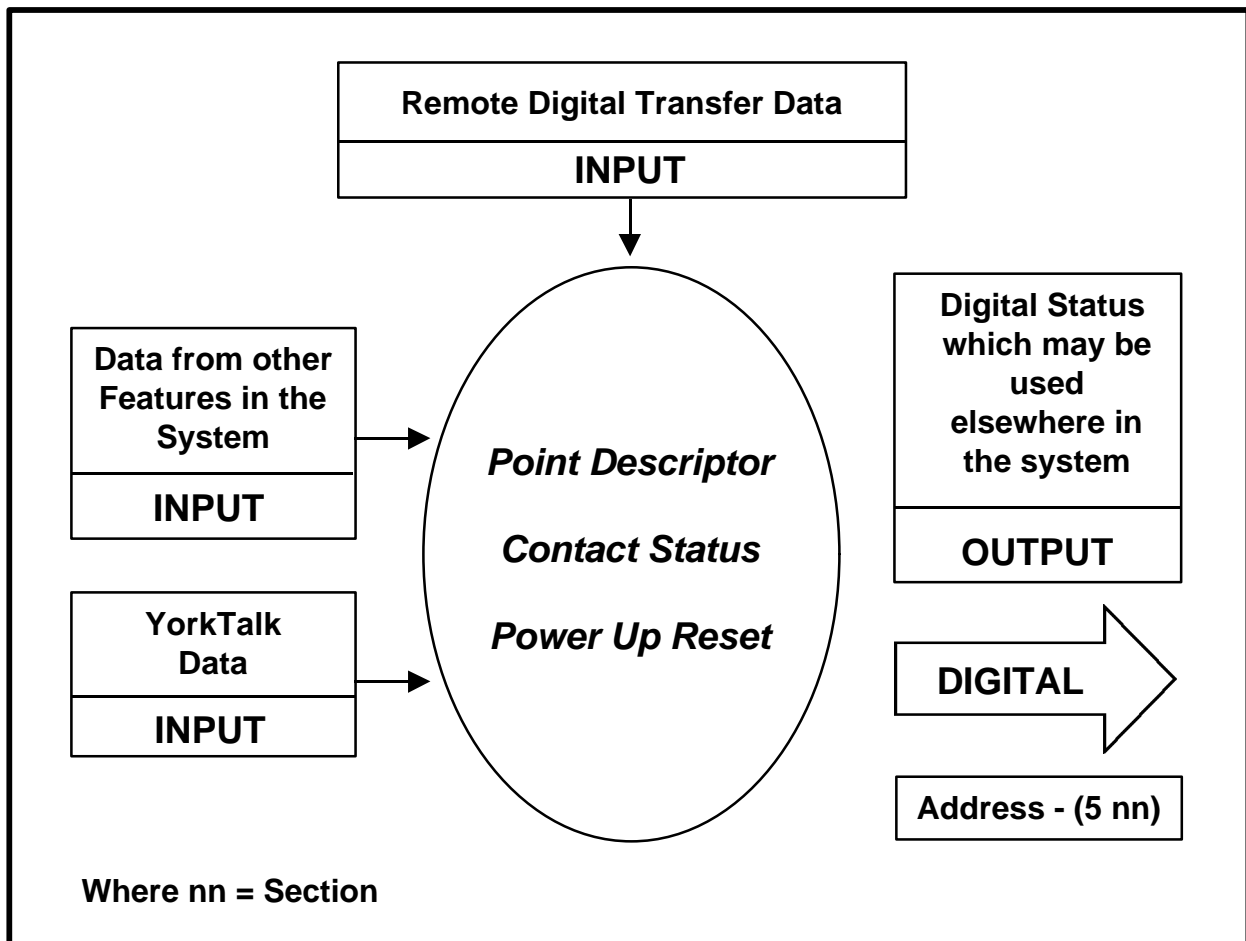
-999.9 to 9999.9

This value represents the **Setpoint**. It is User configurable and will be displayed on Page 01 if the source has been selected to “**SETPOINT**” and the configured value is within the limits defined on Page 07.

The **Setpoint** is subject to the clamp specified on Page 07. This limits the value of the Setpoint entered by the End User..

FEATURE 05 – DIGITAL STATUS

7.0 FEATURE F05 – GRAPHIC OVERVIEW OF OPERATION



7.1 FEATURE F05 – DIGITAL STATUS

The Digital Status Feature provides the User with an addressable digital indicator, which can be used to pass status information between Features. Functionally, this Feature can be used to display and store:

- a. Digital status generated by other Features in the system.
- b. Status information received from a remote destination.

The status information is processed by the controller once every system cycle. The Feature provides each indicator with an identifying name. Each Section within the Feature allows the definition of one unique digital indicator.

7.2 TYPE OF FEATURE

Acquisition

7.3 REFERENCE FEATURES

The contact states registered by the Digital Status Feature can be used by the other following Features:

- F03 - System Variable**
- F29 - Digital Transfer**
- F31 - Time Program**
- F33 - Time Schedule**
- F40 - Digital Interlock**
- F48 - Report Configuration**
- F52 - YorkTalk 1**
- F53 - YorkTalk 3**
- F54 - YorkTalk 2**
- F55 - Multiplexing**
- F56 - De-Multiplexing**
- F58 - EEPROM Set Up**
- F62 - N2 Digital Map**

7.4 SECTIONS

F05 DIGITAL STATUS Snn tttttttttt

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At the Section level, the Section being viewed will appear together with the descriptor from Page 01.

7.5 SUMMARY OF PAGES

Page 01	Status Input Descriptor
Page 02	Contact Made State and Open State
Page 03	Signal Source
Page 04	Default State
Page 05	Reset on Power Up

7.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt mmm

t..t Descriptor *User Entered Text or Menu*

Up to 12 characters may be entered to describe each Section. For example: "**CHILLER S/S**" or "**OVERLOAD**".

mmm Current Status *System Generated*

This is the current status of the input point being monitored. The text which describes each state is defined on Page 02.

P02 MADE: mmm OPEN: mmm

mmm Contact Made and Open State *Menu C*

This is the text that is used to describe the state of the input point displayed on Page 01. It defines the text that is displayed when the input is in the "**MADE**" state and the "**OPEN**" state.

P03 SOURCE mmmmmmmmmmmmm

m..m Data Source

Menu XX

One of the following **six** options must be chosen as described below.

P03 Option 0

P03 SOURCE DUMMY 0 0 0

“**DUMMY**” - This is the status entered on Page 04 and is used as the Feature’s default status. All other fields are unused.

P03 Option 1

P03 SOURCE REMOTE NET nn NODE nn Snn

“**REMOTE**” - A value received from a remote ISN controller.

When configured to “**REMOTE**”, this Feature is capable of receiving data from another controller located on the network.

nn Network, Node, & Section Number of the Data Source.

When a message is received from another controller, it's address (Network Number, Node Number, and origination Section) will be displayed.

P03 Option 2

P03 SOURCE YORK TALK NET nn NODE nn Pnn
--

“**YORKTALK**” - A status is received from *F52*, *F53* or *F54* – *YorkTalk*, via a YorkTalk Network.

nn Network, Node, & Page Number of the Data Source.

The "link" is made in the YorkTalk Features by specifying the Section F05 address to where the data is to be sent.

P03 Option 3

P03 SOURCE DE-MULTPX SECT nn Page 0 0
--

“**DE-MULTIPLX**” - A value will be displayed from *F56 - De-Multiplexing*.

nn Section Number of the appropriate *F56 – De-Multiplexing*.

P03 Option 4

P03 SOURCE NODE 0 0 0

“**NODE**” - When selected, the status of Switch 8 from the Micro-Gateway Node switch is displayed on Page 01. The User may change this value by manually adjusting the switch on the controller.

Whenever Switch 8 is adjusted, the new value will be automatically displayed on Page 01. (A delay of several seconds may be experienced).

P03 Option 5

P03 SOURCE SYSTEM 0 0 0

“**SYSTEM**” - A value which is received from the output of other certain Features.

Included Features are:

- F31 - Time Program**
- F39 - Analog Interlock**
- F40 - Digital Interlock**
- F46 - Network Status**
- F52 - York Talk 1**
- F53 - York Talk 3**
- F54 - York Talk 4**

These Features must specify “**F05**” and its appropriate Section. Likewise, Page 03 of F05 **must** be set to “**SYSTEM**” for the coupling to take effect.

P04 DEFAULT STATE mmmm*m..m* Default Contact State*Menu D*

When the Signal Source on Page 3 is set to “**DUMMY**”, this Page selects the Default Value and displays it on Page 01.

However, if Page 03 is set to either “**YORKTALK**” or “**REMOTE**”, when power is initially applied, or the system is switched from the “**HALT**” to the “**RUN**” mode, the value chosen as default will be used until receipt of “**REMOTE**” or “**YORKTALK**” data, is received.

P05 RESET ON POWER UP mmmm*m..m* Reset Request*Menu N*

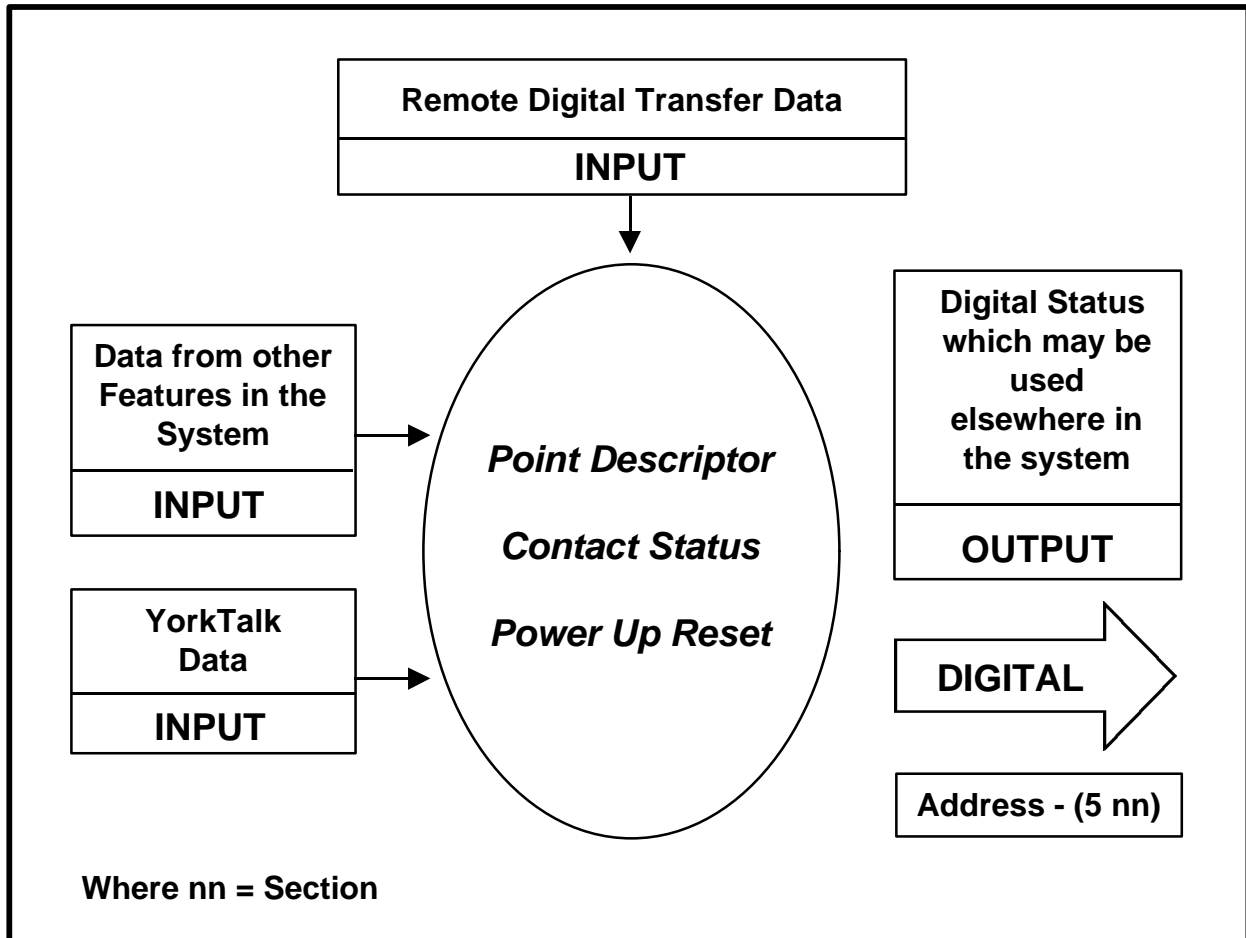
This Page applies only if the source is set to “**REMOTE**” or “**YORKTALK**”. It is used to determine what status should be displayed on Page 01 after a power failure.

If “**NO**” is configured, the status prior to power failure is retained.

If “**YES**” is configured, the default status on Page 04 is used.

FEATURE 06 – DIGITAL STATUS

8.0 FEATURE F06 – GRAPHIC OVERVIEW OF OPERATION



8.1 FEATURE F06 – DIGITAL STATUS

The Digital Status Feature provides the User with an addressable digital indicator, which can be used to pass status information between Features. Functionally, this Feature can be used to display and store:

- a. Digital status generated by other Features in the system.
- b. Status information received from a remote destination.

The status information is processed by the controller once every system cycle. The Feature provides each indicator with an identifying name. Each Section within the Feature allows the definition of one unique digital indicator.

8.2 TYPE OF FEATURE

Acquisition

8.3 REFERENCE FEATURES

The contact states registered by the Digital Status Feature can be used by the other following Features:

- F03 - System Variable**
- F29 - Digital Transfer**
- F31 - Time Program**
- F33 - Time Schedule**
- F40 - Digital Interlock**
- F48 - Report Configuration**
- F52 - YorkTalk 1**
- F53 - YorkTalk 3**
- F54 - YorkTalk 2**
- F55 - Multiplexing**
- F56 - De-Multiplexing**
- F58 - EEPROM Set Up**
- F62 - N2 Digital Map**

8.4 SECTIONS

F06 DIGITAL STATUS Snn tttttttttt

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At the Section level, the Section being viewed will appear together with the descriptor from Page 01.

8.5 SUMMARY OF PAGES

Page 01	Status Input Descriptor
Page 02	Contact Made State and Open State
Page 03	Signal Source
Page 04	Default State
Page 05	Reset on Power Up

8.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt mmm

t..t Descriptor *User Entered Text or Menu*

Up to 12 characters may be entered to describe each Section. For example: "**CHILLER S/S**" or "**OVERLOAD**".

mmm Current Status *System Generated*

This is the current status of the input point being monitored. The text which describes each state is defined on Page 02.

P02 MADE: mmm OPEN: mmm

mmm Contact Made and Open State *Menu C*

This is the text that is used to describe the state of the input point displayed on Page 01. It defines the text that is displayed when the input is in the "**MADE**" state and the "**OPEN**" state.

P03 SOURCE mmmmmmmmmmm

m..m Data Source

Menu XX

One of the following **six** options must be chosen as described below.

P03 Option 0

P03 SOURCE DUMMY 0 0 0

“**DUMMY**” - This is the status entered on Page 04 and is used as the Feature’s default status. All other fields are unused.

P03 Option 1

P03 SOURCE REMOTE NET nn NODE nn Snn

“**REMOTE**” - A value received from a remote ISN controller.

When configured to “**REMOTE**”, this Feature is capable of receiving data from another controller located on the network.

nn Network, Node, & Section Number of the Data Source.

When a message is received from another controller, it's address (Network Number, Node Number, and origination Section) will be displayed.

P03 Option 2

P03 SOURCE YORK TALK NET nn NODE nn Pnn
--

“**YORKTALK**” - A status is received from *F52*, *F53* or *F54* – *YorkTalk*, via a YorkTalk Network.

nn Network, Node, & Page Number of the Data Source.

The "link" is made in the YorkTalk Features by specifying the Section F06 address to where the data is to be sent.

P03 Option 3

P03 SOURCE DE-MULTPX SECT nn Page 0 0

“**DE-MULTIPLX**” - A value will be displayed from *F56 - De-Multiplexing*.

nn Section Number of the appropriate *F56 – De-Multiplexing*.

P03 Option 4

P03 SOURCE NODE 0 0 0

“**NODE**” - When selected, the status of Switch 8 from the Micro-Gateway Node switch is displayed on Page 01. The User may change this value by manually adjusting the switch on the controller.

Whenever Switch 8 is adjusted, the new value will be automatically displayed on Page 01. (A delay of several seconds may be experienced).

P03 Option 5

P03 SOURCE SYSTEM 0 0 0

“**SYSTEM**” - A value which is received from the output of other certain Features.

Included Features are:

- F31 - Time Program**
- F39 - Analog Interlock**
- F40 - Digital Interlock**
- F46 - Network Status**
- F52 - York Talk 1**
- F53 - York Talk 3**
- F54 - York Talk 4**

These Features must specify “**F06**” and its appropriate Section. Likewise, Page 03 of F06 **must** be set to “**SYSTEM**” for the coupling to take effect.

P04 DEFAULT STATE mmmm*m..m* Default Contact State*Menu D*

When the Signal Source on Page 3 is set to “**DUMMY**”, this Page selects the Default Value and displays it on Page 01.

However, if Page 03 is set to either “**YORKTALK**” or “**REMOTE**”, when power is initially applied, or the system is switched from the “**HALT**” to the “**RUN**” mode, the value chosen as default will be used until receipt of “**REMOTE**” or “**YORKTALK**” data, is received.

P05 RESET ON POWER UP mmmm*m..m* Reset Request*Menu N*

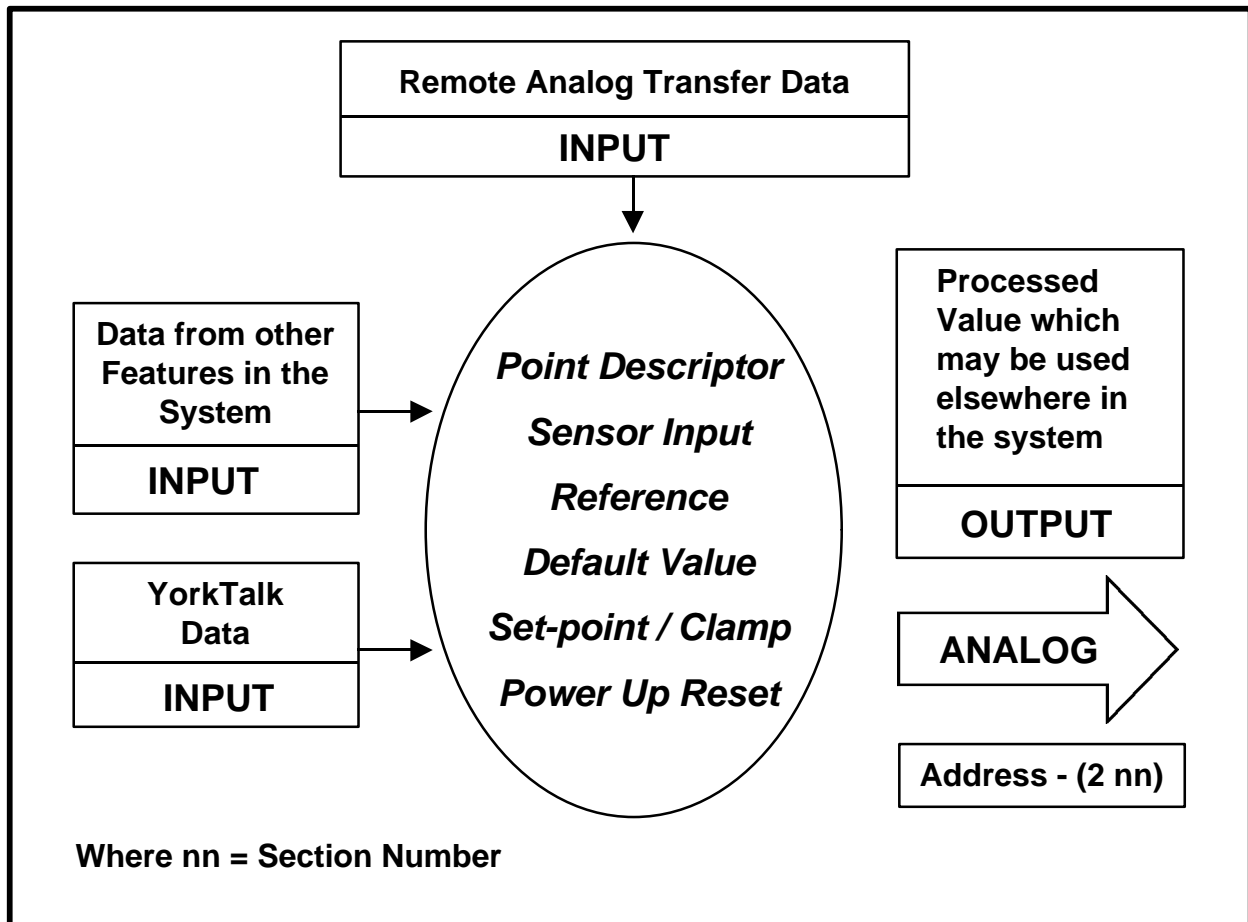
This Page applies only if the source is set to “**REMOTE**” or “**YORKTALK**”. It is used to determine what status should be displayed on Page 01 after a power failure.

If “**NO**” is configured, the status prior to power failure is retained.

If “**YES**” is configured, the default status on Page 04 is used.

FEATURE 07 – ANALOG VALUE

9.0 FEATURE F07 – GRAPHIC OVERVIEW OF OPERATION



9.1 FEATURES F02 - ANALOG VALUE

The Analog Value Feature provides the User with an addressable analog variable, which can be used to pass data between Features.

Functionally, this Feature can be used to display and store:

- a. Analog values generated by other Features in the system.
- b. Data received from a remote destination.

New values are registered by the controller once every system cycle. The Feature provides each variable with an identifying name and an engineering unit of measure. Each Section within the Feature allows the definition of one unique analog variable.

9.2 TYPE OF FEATURES

Acquisition

9.3 REFERENCE FEATURES

The values registered by the Analog Value Feature can be used by the following Features:

F03 - System Variables
F13 - Look-up Table
F20 - Status LED
F28 - Analog Transfer
F39 - Analog Interlock
F48 - Report Configuration
F52 - YorkTalk 1
F53 - YorkTalk 3
F54 - YorkTalk 2
F55 - Multiplexing
F56 - De-Multiplexing
F58 - EEPROM Set Up
F61 - N2 Analog Map

9.4 SECTIONS

F07 ANALOG VALUE Snn tttttttttt
--

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At Section level, the Section being viewed will appear together with the descriptor from Page 01.

9.5 SUMMARY OF PAGES

Page 01	Analog Input Descriptor
Page 02	Reserved
Page 03	Reserved
Page 04	Signal Source
Page 05	Default Value
Page 06	Reset on Power Up
Page 07	Setpoint Min and Max Limits
Page 08	Setpoint Value

9.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01	tttttttttt	vvvvvv	0.0 mmm
------------	-------------------	---------------	----------------

t..t Descriptor *User Entered Text or Menu*

Up to 12 characters may be entered to describe each Section. For example: "**OUTSIDE-AIR**" or "**HW-TEMP**".

v..v Current Value *System Generated*

This is the current value of the analog variable.

mmm Engineering Units *User Selected Menu A*

P02 RESERVED

P03 RESERVED

P04 SOURCE mmmmmmmmmmmmm

m..m Data Source

Menu WW

One of the following **eleven** options must be chosen, as described below.

P04 Option 0

P04 SOURCE DUMMY 0 0 0

“**DUMMY**” - This is a value entered on Page 05 and is used as the Feature’s default input. All other fields are unused.

P04 Option 1

P04 SOURCE REMOTE NET nn NODE nn Snn

“**REMOTE**” - A value received from a remote ISN device.

When configured to “**REMOTE**”, this Feature is capable of receiving data from another controller located remotely on the network.

nn Network, Node & Section Number of the Data Source.

When a message is received from another controller, it’s address (network number, node number and originating Section) will be displayed.

P04 Option 2

P04 SOURCE YORK TALK NET nn NODE nn Pnn
--

“**YORKTALK**” - A value is received from *F52, F53 or F54* - *YorkTalk* via a YorkTalk network.

nn Network, Node & Page Number of the Data Source.

The "link" is made in the YorkTalk Features by specifying the F02 Section address to where the data is sent.

P04 Option 3

P04 SOURCE TIME 0 0 0

“**TIME**” - A value received from *F10 - System Calendar*.

P04 Option 4

P04 SOURCE DATE 0 0 0

“**DATE**” - A value received from *F10 - System Calendar*. The date will be displayed as a 4 digit value. The first two digits denote the day of the month, the last two digits denote the month.

For example: **1211 = 12th November**

P04 Option 5

P04 SOURCE DAY-TYPE 0 0 0

“**DAY-TYPE**” - A value received from *F10 - System Calendar* will be displayed as a single digit value representing the day of the week.

- 1 = Monday**
- 2 = Tuesday**
- 3 = Wednesday**
- 4 = Thursday**
- 5 = Friday**
- 6 = Saturday**
- 7 = Sunday**

P04 Option 6

P04 SOURCE NXT START FEAT nn SECT nn 0
--

“**NXT START**” - This is a value representing the next start time. It is selected from *F33 - Time Schedule*.

The "link" is made in *F33* by specifying the F02 Section address to where the data is sent.

When the **first** start time has been reached, the value on this Page will be maintained until midnight for a **single** start per day.

For **multiple** starts per day, this value will be updated with the next start time for the given day after the first stop time has been reached.

This process will continue until the last start time for the day has been reached. This value will then be maintained until midnight. If the following day has **no** start time specified, the value will be reset to zero at midnight.

nn Defines the Feature and Section Number of the Source.

P04 Option 7

P04 SOURCE NXT STOP FEAT nn SECT nn 0

“**NEXT STOP**” - This is a value representing the next stop time. It is selected from *F33 - Time Schedule*.

The "link" is made in *F33* by specifying the F02 Section address to where the data is sent.

When the **first** stop time has been reached, the value on this Page will be maintained until midnight for a single start per day. For **multiple** starts per day this value will be updated with the next stop time for the given day, after the second start time has been reached. This process will continue until the last stop time for the day is reached. The value will then be maintained until midnight. If the following day has **no** stop time specified the value will be reset to zero at midnight.

nn Defines the Feature and Section Number of the Source.

P04 Option 8

P04 SOURCE MULTIPLEX SECT nn 0 0

“**MULTIPLEX**” - A value received from the *F55 - Multiplexing Feature* will be displayed.

nn Section Number of the appropriate *F55 – Multiplexing Feature*.

P04 Option 9

P04 SOURCE SETPOINT 0 0 0

“**SETPOINT**” - The value configured in Page 08 will be displayed on Page 01. This value is compared to the **minimum** and **maximum** values as entered on Page 07. If it is outside this range it will automatically be clamped to either the **minimum** or **maximum** value, whichever is the more appropriate.

P04 Option 10

P04 SOURCE NODE NUM 0 0 0

“**NODE NUM**” - When selected, the controller’s Node address is displayed on Page 01. The User may change this value by adjusting the Node switch on the hardware.

Whenever the Node switch is adjusted, the new value will be automatically displayed on Page 01. (A delay of several seconds may be experienced).

P05 DEFAULT VALUE vvvvvv

v..v Default Value

-999.9 to 9999.9

This Page is used to select the **default value** on Page 01 if the signal source is set to “**DUMMY**”. If Page 04 is set to either “**YORKTALK**” or “**REMOTE**” then when power is initially applied and the system is switched from the “**HALT**” to “**RUN**” mode, the **default value** will be used until receipt of “**REMOTE**” or “**YORKTALK**” data.

P06 RESET ON POWERUP mmm*mmm* Reset Request*Menu N*

This Page is used whenever the source is set to "**REMOTE**" or "**YORKTALK**". It is used to determine what value should be displayed on Page 01 after a power failure.

If "**NO**" is configured then the value prior to the power failure will be retained.

If "**YES**" is configured then the default value on P05 will be used.

P07 SETPOINT MIN vvvvvv MAX vvvvvv*v..v* Setpoint Minimum*-999.9 to 9999.9*

This is the value entered into the "**MIN**" field which defines the **lowest** value of the Setpoint which can be entered on Page 08.

If the User enters a value **lower** than the "**Min**", the actual value "rolls up" to the **minimum** value.

v..v Setpoint Maximum*-999.9 to 9999.9*

This is the value entered into the "**MAX**" field which defines the **highest** value of the Setpoint which can be entered on Page 08.

If the User enters a value **higher** than the "**MAX**", the actual value "falls back" to the **maximum** value.

Both the "**MIN**" and "**MAX**" fields must be configured for setpoint value to operate correctly. If the "**MIN**" and "**MAX**" fields remain **unconfigured**, the full Setpoint range on P08 is available.

P08 SETPOINT vvvvvv

v..v Setpoint

-999.9 to 9999.9

This value represents the **Setpoint**. It is User configurable and will be displayed on Page 01 if the source has been selected to “**SETPOINT**” and the configured value is within the limits defined on Page 07.

The **Setpoint** is subject to the clamp specified on Page 07. This limits the value of the Setpoint entered by the End User.

FEATURE 8 – CONDITIONAL LOGIC

10.1 CONDITIONAL LOGIC OVERVIEW

This Feature is used to generate a result based on the value or status of four system variables. It uses the traditional ***IF-Then-Else*** Statements. The output of this Feature may either be an **ANALOG VALUE** or a **DIGITAL VALUE**

10.2 TYPE OF FEATURE

Acquisition

10.3 REFERENCE FEATURES

F01 - Digital Status
 F02 - Analog Value
 F03 - System Variable
 F04 - Analog Value
 F05 - Digital Status
 F06 - Digital Status
 F07 - Analog Value
 F08 - Conditional Logic
 F09 - Analog Value

10.4 SECTIONS

F08	CONDITIONAL LOGIC	Sm	tttttttttt
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Snn Section Number *System Generated*

t . . t Descriptor *System Generated*

This is the Descriptor entered on Page 01

10.5 SUMMARY OF PAGES

Page 01	Descriptor and Output Value
Page 02	IF Statements
Page 03	THEN Statements
Page 04	ELSE Statements
Page 05	Then Units, Else Units
Page 06-09	Input Identifier
Page 10	Enable Address
Page 11	Enable Mode
Page 12	Trigger Point
Page 13	Default Value

10.6 PAGE DETAIL

P01 tttttttttt	vvvvvv
-----------------------	--------

t . . t Descriptor *User Entered Text*

Up to **12 characters** can be entered which describe the Conditional Logic Calculation.

For example: “**FAN1/FAN2**”

P02 IF 000 mm 000 vvvvvv mmm	000 mm 000 vvvvv
-------------------------------------	-------------------------

000 Input Address *System Generated*

This is the address selected from P06, P07, P08 or P09, Inputs 1A, 1B, 1C or 1D, respectively.

mm Conditional Operator *Menu HHH*

This is the selected operator chosen for the appropriate comparison of the two input address values.

vvvvv Input Value *System Generated*

This is the substituted **fixed** value when no address is specified for inputs 1B and/or 1D (P07, P09).

mmm Logic Operator

Menu JJJ

This combines the two conditional term expressions using standard logic operators. For example, a two-term logic statement might read:

“IF 301 < 302 AND 303 < 100”.

P03 THEN sss tttttttttt	vvvvvv	vvvvv
--------------------------------	---------------	--------------

sss Input Address

User Entered

t...t Input Descriptor

System Generated

v...v Input Value

System Generated

This is the description and current value of the selected input. If the F08 expression results in **TRUE**, then this address value is asserted.

Select From:

- F01 - Digital Status**
- F02 - Analog Value**
- F03 - System Variable**
- F04 - Analog Value**
- F05 - Digital Status**
- F06 - Digital Status**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

v...v

User Entered

If the user chooses not to enter a value from an input address, he may enter a **fixed** value. If the expression on P02 results in **TRUE**, then this value is asserted.

P04 ELSE SSS tttttttttt	vvvvvv	vv
--------------------------------	---------------	-----------

sss Input Address

User Entered

t...t Input Descriptor

System Generated

v...v Input Value

System Generated

This is the description and current value of the selected input. If the F08 expression results in the **FALSE**, then this address value is asserted.

Select From:

- F01 - Digital Status**
- F02 - Analog Value**
- F03 - System Variable**
- F04 - Analog Value**
- F05 - Digital Status**
- F06 - Digital Status**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

v...v

User Entered

If the user chooses not to enter a value from an input address, he may enter a **fixed** value. If the expression on P02 results in **FALSE**, then this value is asserted.

P05 “THEN” UNITS mmm	“ELSE” UNITS mmm
-----------------------------	-------------------------

mmm Engineering Units

Menu A

Select the appropriate engineering units descriptor for both the **“THEN”** and the **“ELSE”** units.

Pnn I/Pn sss tttttttttt	vvvvv
--------------------------------	--------------

Input Address

nn Page number (06 to 09)

System Generated

Up to **four** inputs can be used in a calculation. An individual Page is used to hold the address of each input used.

n Input Number (A,B,C or D)
sss Input Address

System Generated
User Entered

One of the following addresses must be selected as an input to the calculation.

Select From:

- F01 - Digital Status
- F02 - Analog Value
- F03 - System Variable
- F04 - Analog Value
- F05 - Digital Status
- F06 - Digital Status
- F07 - Analog Value
- F08 - Conditional Logic
- F09 - Analog Value

P 10 ENABLE POINT sss tttttttttt

sss Enable Address

User Entered

This field is used to specify the address of a digital point. It will determine if the calculated value will equal the **default**, or contain a **result**. The calculated value will contain a result when the status chosen in Page 12 is active.

Select From:

- F01 - Digital Status
- F05 - Digital Status
- F06 - Digital Status

t..t Descriptor

System Generated

This is the Page 01 descriptor which is associated with the point specified.

The Enable point has precedence over the operation of the Trigger point (P12).

P 11 ENABLED = mmmm

m..m Enable Mode Status

Menu D

This is the **status**, which must be indicated by the digital point to enable a value to be calculated.

When the point specified is **equal** to this state, the calculation is allowed to run. When the point specified is not **equal** to this state, the calculation will equal the **default value**.

If no ENABLE point is defined on Page 11, then this state must be configured to “**MADE**” in order for this Section to function.

P 12 TRIGGER POINT sss tttttttttt
--

sss Trigger Address

User Entered

This field is used to specify the address of a digital point, which will cause the calculated value to "freeze" when in the “**OPEN**” state. When in the “**MADE**” state the calculation will run. The facility can hold a value for a period of time and then allow the calculation to continue from the value at which it was held.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor

System Generated

This is the Page 01 descriptor which is associated with the point specified.

P 13 DEFAULT vvvvvv mmm

v....v

0 to 9999.9

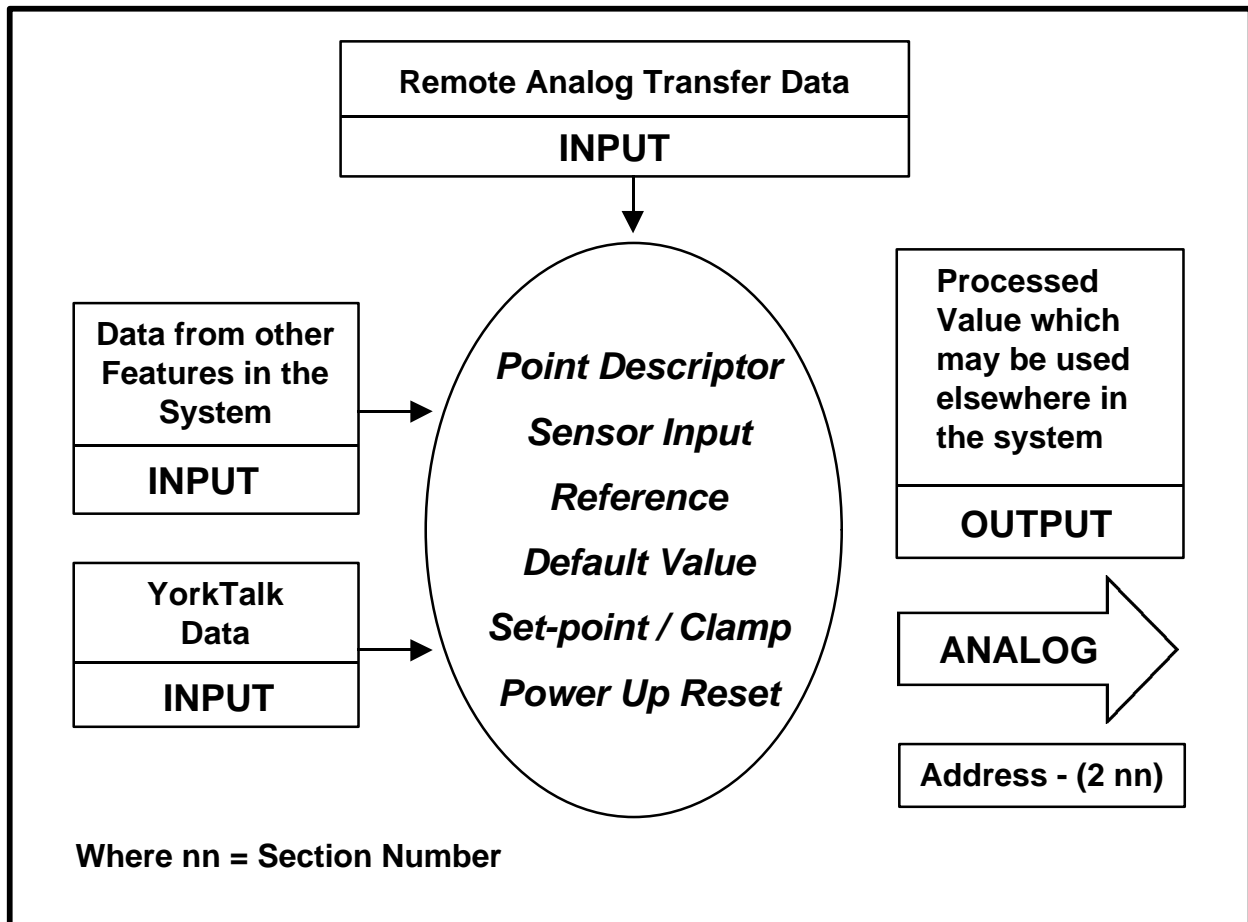
mmm Engineering Units

Menu A

This value is assigned to the output of the Feature when it is disabled or if the User has not configured Page 02.

FEATURE 09 – ANALOG VALUE

11.0 FEATURE F09 – GRAPHIC OVERVIEW OF OPERATION



11.1 FEATURES F09 - ANALOG VALUE

The Analog Value Feature provides the User with an addressable analog variable, which can be used to pass data between Features.

Functionally, this Feature can be used to display and store:

- a. Analog values generated by other Features in the system.
- b. Data received from a remote destination.

New values are registered by the controller once every system cycle. The Feature provides each variable with an identifying name and an engineering unit of measure. Each Section within the Feature allows the definition of one unique analog variable.

11.2 TYPE OF FEATURES

Acquisition

11.3 REFERENCE FEATURES

The values registered by the Analog Value Feature can be used by the following Features:

F03 - System Variables
F13 - Look-up Table
F20 - Status LED
F28 - Analog Transfer
F39 - Analog Interlock
F48 - Report Configuration
F52 - YorkTalk 1
F53 - YorkTalk 3
F54 - YorkTalk 2
F55 - Multiplexing
F56 - De-Multiplexing
F58 - EEPROM Set Up
F61 - N2 Analog Map

11.4 SECTIONS

F09 ANALOG VALUE Snn tttttttttt
--

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At Section level, the Section being viewed will appear together with the descriptor from Page 01.

11.5 SUMMARY OF PAGES

Page 01	Analog Input Descriptor
Page 02	Reserved
Page 03	Reserved
Page 04	Signal Source
Page 05	Default Value
Page 06	Reset on Power Up
Page 07	Setpoint Min and Max Limits
Page 08	Setpoint Value

11.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01	tttttttttt	vvvvvv	0.0 mmm
------------	-------------------	---------------	----------------

t..t Descriptor *User Entered Text or Menu*

Up to 12 characters may be entered to describe each Section. For example: "**OUTSIDE-AIR**" or "**HW-TEMP**".

v..v Current Value *System Generated*

This is the current value of the analog variable.

mmm Engineering Units *User Selected Menu A*

P02 RESERVED

P03 RESERVED

P04 SOURCE mmmmmmmmmmm

m..m Data Source

Menu WW

One of the following **eleven** options must be chosen, as described below.

P04 Option 0

P04 SOURCE DUMMY 0 0 0

“**DUMMY**” - This is a value entered on Page 05 and is used as the Feature’s default input. All other fields are unused.

P04 Option 1

P04 SOURCE REMOTE NET nn NODE nn Snn

“**REMOTE**” - A value received from a remote ISN device.

When configured to “**REMOTE**”, this Feature is capable of receiving data from another controller located remotely on the network.

nn Network, Node & Section Number of the Data Source.

When a message is received from another controller, it’s address (network number, node number and originating Section) will be displayed.

P04 Option 2

P04 SOURCE YORK TALK NET nn NODE nn Pnn

“**YORKTALK**” - A value is received from *F52, F53 or F54* - *YorkTalk* via a YorkTalk network.

nn Network, Node & Page Number of the Data Source.

The "link" is made in the YorkTalk Features by specifying the F09 Section address to where the data is sent.

P04 Option 3

P04 SOURCE TIME 0 0 0

“**TIME**” - A value received from *F10 - System Calendar*.

P04 Option 4

P04 SOURCE DATE 0 0 0

“**DATE**” - A value received from *F10 - System Calendar*. The date will be displayed as a 4 digit value. The first two digits denote the day of the month, the last two digits denote the month.

For example: **1211 = 12th November**

P04 Option 5

P04 SOURCE DAY-TYPE 0 0 0

“**DAY-TYPE**” - A value received from *F10 - System Calendar* will be displayed as a single digit value representing the day of the week.

- 1 = Monday**
- 2 = Tuesday**
- 3 = Wednesday**
- 4 = Thursday**
- 5 = Friday**
- 6 = Saturday**
- 7 = Sunday**

P04 Option 6

P04 SOURCE NXT START FEAT nn SECT nn 0
--

“**NXT START**” - This is a value representing the next start time. It is selected from *F33 - Time Schedule*.

The "link" is made in *F33* by specifying the F09 Section address to where the data is sent.

When the **first** start time has been reached, the value on this Page will be maintained until midnight for a **single** start per day.

For **multiple** starts per day, this value will be updated with the next start time for the given day after the first stop time has been reached.

This process will continue until the last start time for the day has been reached. This value will then be maintained until midnight. If the following day has **no** start time specified, the value will be reset to zero at midnight.

nn Defines the Feature and Section Number of the Source.

P04 Option 7

P04 SOURCE NXT STOP FEAT nn SECT nn 0

“**NEXT STOP**” - This is a value representing the next stop time. It is selected from *F33 - Time Schedule*.

The "link" is made in *F33* by specifying the F09 Section address to where the data is sent.

When the **first** stop time has been reached, the value on this Page will be maintained until midnight for a single start per day. For **multiple** starts per day this value will be updated with the next stop time for the given day, after the second start time has been reached. This process will continue until the last stop time for the day is reached. The value will then be maintained until midnight. If the following day has **no** stop time specified the value will be reset to zero at midnight.

nn Defines the Feature and Section Number of the Source.

P04 Option 8

P04 SOURCE MULTIPLEX SECT nn 0 0

“**MULTIPLEX**” - A value received from the *F55 - Multiplexing Feature* will be displayed.

nn Section Number of the appropriate *F55 – Multiplexing Feature*.

P04 Option 9

P04 SOURCE SETPOINT 0 0 0

“**SETPOINT**” - The value configured in Page 08 will be displayed on Page 01. This value is compared to the **minimum** and **maximum** values as entered on Page 07. If it is outside this range it will automatically be clamped to either the **minimum** or **maximum** value, whichever is the more appropriate.

P04 Option 10

P04 SOURCE NODE NUM 0 0 0

“**NODE NUM**” - When selected, the controller’s Node address is displayed on Page 01. The User may change this value by adjusting the Node switch on the hardware.

Whenever the Node switch is adjusted, the new value will be automatically displayed on Page 01. (A delay of several seconds may be experienced).

P05 DEFAULT VALUE vvvvvv

v..v Default Value

-999.9 to 9999.9

This Page is used to select the **default value** on Page 01 if the signal source is set to “**DUMMY**”. If Page 04 is set to either “**YORKTALK**” or “**REMOTE**” then when power is initially applied and the system is switched from the “**HALT**” to “**RUN**” mode, the **default value** will be used until receipt of “**REMOTE**” or “**YORKTALK**” data.

P06 RESET ON POWERUP mmm*mmm* Reset Request*Menu N*

This Page is used whenever the source is set to "**REMOTE**" or "**YORKTALK**". It is used to determine what value should be displayed on Page 01 after a power failure.

If "**NO**" is configured then the value prior to the power failure will be retained.

If "**YES**" is configured then the default value on P05 will be used.

P07 SETPOINT MIN vvvvvv MAX vvvvvv*v..v* Setpoint Minimum*-999.9 to 9999.9*

This is the value entered into the "**MIN**" field which defines the **lowest** value of the Setpoint which can be entered on Page 08.

If the User enters a value **lower** than the "**Min**", the actual value "rolls up" to the **minimum** value.

v..v Setpoint Maximum*-999.9 to 9999.9*

This is the value entered into the "**MAX**" field which defines the **highest** value of the Setpoint which can be entered on Page 08.

If the User enters a value **higher** than the "**MAX**", the actual value "falls back" to the **maximum** value.

Both the "**MIN**" and "**MAX**" fields must be configured for setpoint value to operate correctly. If the "**MIN**" and "**MAX**" fields remain **unconfigured**, the full Setpoint range on P08 is available.

P08 SETPOINT vvvvvv

v..v Setpoint

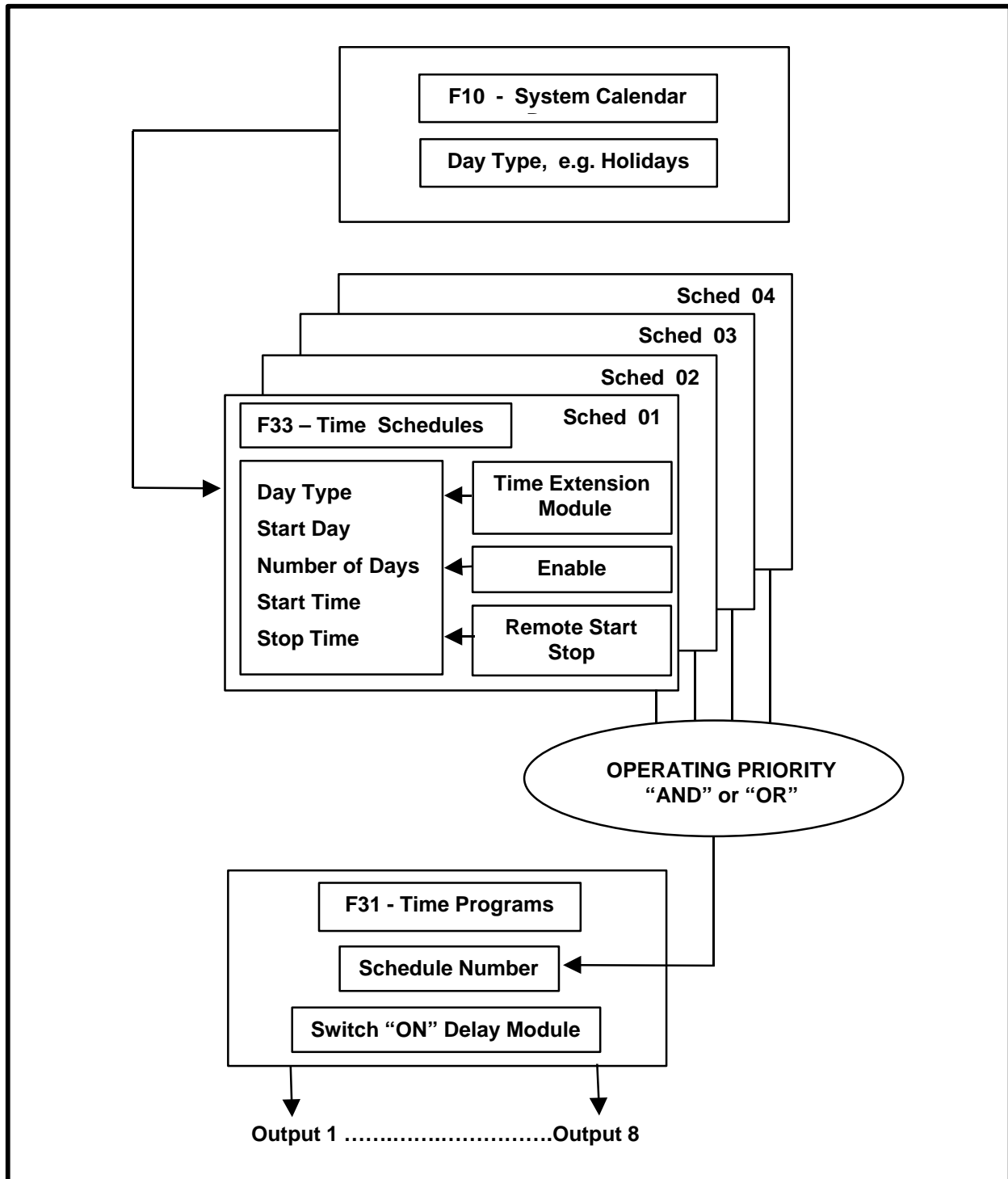
-999.9 to 9999.9

This value represents the **Setpoint**. It is User configurable and will be displayed on Page 01 if the source has been selected to “**SETPOINT**” and the configured value is within the limits defined on Page 07.

The **Setpoint** is subject to the clamp specified on Page 07. This limits the value of the Setpoint entered by the End User..

FEATURE 10 - SYSTEM CALENDAR

12.0 FEATURE 10 – GRAPHIC OVERVIEW OF OPERATION



12.1 FEATURE 10 – SYSTEM CALENDAR

The System Calendar Feature is used to configure the controller's time and date references. It allows the User to configure the holiday schedules as required by *F31 - Time Program*. It also provides some date dependant switches, including Date, Time, Day of Week, etc.

Date
Time
Day of Week
Summertime Start & End Dates
Special Days
Holidays

12.2 TYPE OF FEATURE

System

12.3 REFERENCE FEATURES

F01 - Digital Status
F02 - Analog Value
F04 - Analog Value
F05 - Digital Status
F06 - Digital Status
F07 - Analog Value
F09 - Analog Value
F31 - Time Program
F33 - Time Schedule

12.4 SECTIONS

F10 SYSTEM CALENDAR S01 BASIC DATA

S01 Section Number

All the data maintained by the System Calendar Feature is contained in a single Section. This maintains a complete Gregorian Calendar.

12.5 SUMMARY OF PAGES

Page 01	Date and Time
Page 02	Day of Week / Type of Day
Page 03	Present Year
Page 04	USA Daylight Savings
Page 05	Summer and Winter Start Time
Page 06-22	Holidays
Page 23	Op. Season Start and End Dates
Page 24	Season Output
Page 25	Holiday Default Open

12.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 DATE: mmmdd TIME: hhmm HOURS

<i>mmm</i> Month	<i>User Entered 01 to 12</i>
<i>dd</i> Days	<i>User Entered 01 to 31</i>
<i>hh</i> Hours	<i>User Entered 00 to 23</i>
<i>mm</i> Minutes	<i>User Entered 00 to 59</i>

A leading zero must be included when single digit minutes are entered.

When entering the date, the User must configure the day number, followed by the month number. For example: **16 03** means **MAR 16**.

The hours must be entered using the "24 Hour Clock" format. For example: **1700** would have to be entered for **5 P.M.**

P02 DAY: mmmmmmmmm tttttt

m..m Day of Week *System Generated*

t..t Type of Day *System Generated*

This field displays the current type of day the system is observing. This is automatically updated and can be any one of the following:

“WEEKDAY”

“WEEKEND”

“HOLIDAY”

P03 YEAR: yyyy

y..y Present Year *User Entered 4 Digit Year No.*

This will automatically update at the start of each year.

P04 USA DAYLIGHT SAVINGS mmm ddmmm ddmmm

mmm Daylight Saving Request *Menu N*

If daylight saving is requested, the dates for adjusting the clock will be automatically calculated for the current year and then displayed in the following fields.

If this option is selected the dates on Page 05 will be ignored.

ddmmm Spring Date *System Generated*

This is the springtime date for advancing the clock by one hour.

ddmmm Fall Date *System Generated*

This is the fall time date for retarding the clock by one hour.

The time will be adjusted at **01:59** on the date displayed.

P05 SUMMER ddmw WINTER ddmw

ddmw Day and Month Number

User Entered

A new Summer Time Start Date must be entered each year. The time will be moved forward by one hour, **at 0200 Hours** on the day scheduled.

ddmw Day and Month Number

User Entered

A new Winter Time Start Date must be entered each year. The time will be moved backward by one hour, **at 0200 Hours** on the day scheduled.

Ppp HOLIDAY nn ddmw vv DAY (S)

Holidays

Ppp Page Number

06 to 22

Up to seventeen Holiday days, 01 to 17 can be programmed using Page 06 through to Page 22 inclusively.

nn Holiday Number

System Generated

This number is inserted automatically by the system.

Page 06 will display the date and the duration of Holiday 01; Page 07 will display Holiday 02's parameters and so on, until Holiday 17 is reached.

ddmw Holiday Date

Day and Month No.

vv Duration of Holiday

0 to 99 days

P23 OP. SEASON START ddmmm END ddmmm

Operating Season Dates

ddmmm Day and Month Number

The operating season Start and Stop dates are used to switch the point specified on Page 24 “**ON**” and “**OFF**” based on date.

The point will be switched “**ON**” at 0000 hrs on the start date and switched “**OFF**” at 0000hrs on the stop date.

For example, Op. Season Start 15 Oct and Stop 25 May would result in the output switching “**ON**” at 0000hrs on the 15th of October and remaining “**ON**” until 0000hrs on the 25th of May.

P24 SEASON O/P sss tttttttttt sss

sss Point Address *ID*

This is the address of the point, which will be controlled by the operating season dates configured on Page 23.

Select From:

- F01 - Digital Status**
- F05 - Digital Status**
- F06 - Digital Status**

t..t Point Descriptor *System Generated*

The description of the point addressed.

sss Current Status *System Generated*

The current status of the point.

P25 HOLIDAY DEFAULT OPEN mmm

Holiday Default Setting.

This menu option provides the User with the ability to select how the outputs are to be controlled during the holiday periods.

If this page is set to “**NO**”, the output points as defined in *F31 - Time Programs* will be controlled by this configuration. This assumes, however that (1) the date of the holiday has been defined within this Feature and (2) the start and stop times have been defined in *Feature 33 - Time Schedules*.

If this page is set to “**YES**”, all the outputs will be switched “**OFF**” during the period of the holiday schedule.

m..m Default Setting

Menu N

FEATURE 13 – LOOK-UP TABLE

13.1 SENSOR INPUT OVERVIEW

The purpose of this Feature is to provide a translation table between two User-entered values. The Feature generates a corresponding output value based on the table. Thus, for every **Input** value there is a corresponding **Output** value

Feature 03 provides an **input/output gateway** to a given section of *F13*.

13.2 TYPE OF FEATURE

Acquisition

13.3 REFERENCE FEATURES

F03 System Variables

Note: Other Features such as *F02*, *F08*, can be indirectly access *F13* via *Feature 03*.

13.4 SECTIONS

F13 SENSOR INPUT Snn tttttttttt
--

nn Section Number *System Generated*

t..t Contents of Page 01 *System Generated*

At the Section level, the Section being viewed will appear together with the descriptor from Page 01

13.5 SUMMMARY OF PAGES

Page 01	Descriptor and Table
Page 02	Reserved
Page 03	Table Type
Page 04	Reset Table
Page 05	Range Update
Page 06	Actual Range
Page 07	Interpolate On/Off
Pages 08-47	Input/Output Cross Reference

13.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt mmmmm

t..t Descriptor *User Entered*

Up to 12 characters may be entered to describe each section.

m....m Input Type *System Generated*

This table type is **Fixed** as “**USER**”, as described on Page 03

P02 RESERVED

P03 TABLE TYPE: ttttt

t..t Table Type *System Generated*

This table type is **fixed** as “**USER**” type table meaning that the table entries must be designed by the User and are not predetermined templates.

P04 PRESS ENTER TO RESET TABLE

From the Terminal Interface it is possible for the User to reset all table entries. This is accomplished by entering the “**e**” value from the Terminal.

P05 PRESS ENTER TO UPDATE RANGE

From the Terminal Interface, it is possible for the User to update the Range calculation whenever the table has been redesigned. This is accomplished by entering an “e” value from the Terminal.

P06 RANGE = P08 (vvvv) P8 (vvvv) RNG: 1

v...v

System Generated

Range is defined as a list of consecutive V_{ip} values that are arranged in an ascending order. The software determines **Range** by searching the table to find the first V_{ip} value, which is not greater than the previous V_{ip} value, this condition is then used to define the last element in the valid **Range**. This definition ensures that there will always be a valid range for **F13** to operate on. If no points are configured the active Range will be the first pair of points (0, 0). When the **Feature** operates within “Range”, the output value is determined by the **look-up** table.

P07 INTERPOLATE mmm

m..m Interpolated Yes/No

Menu N

The User may select to turn interpolation **ON** selecting “**YES**” or **OFF** by selecting “**NO**”.

The output generated by **F13** is dependent on the way in which the Look Up Table has been configured.

Case 1 (Only One Point Configured)

If the user has only configured **one** point in the table and has also **selected interpolation** then the output from F13 is given by:

$O/P = (Y_o / X_o) * X_{I/P}$ (where X_o and Y_o are the first pair of values in the table and, $X_{I/P}$ is the input value)

If X_o is set to zero (not configured) then $O/P = Y_o$

If the user has only configured **one** point in the table and has **not selected interpolation** then the output from F13 is given by:

$O/P = Y_o$ (where Y_o is the first value in the table)

Case 2 (Multiple Points Configured)

If the input value **matches** one of the configured X_n points in the table (input value = X_n) then the output of F13 is given by:

$O/P = Y_n$ (where Y_n is the corresponding value to X_n in the table)

If the input value **does not match** any of the configured X_n points in the table but is **within the active range** then the output of F13 is given by:

With **Interpolation selected**

$O/P = ((Y_n - Y_{n-1}) / (X_n - X_{n-1})) * (\text{Input value} - X_{n-1}) + Y_{n-1}$ (where $X_{n-1} < \text{input value} < X_n$)

With **Interpolation not selected**

$O/P = Y_n$ (where Y_n is the value which corresponds to X_n , and X_n represents the value which is closest to the input value).

If the input value **does not match** any of the configured X_n points in the table and is **not within the active range** the output of F13 is given by:

With **Interpolation selected** and the input value being less than the minimum value in the table.

$$O/P = ((Y_2 - Y_1) / (X_2 - X_1)) * (\text{Input value} - X_1) + Y_1$$

With **Interpolation selected** and the input value being greater than the maximum value in the table.

$$O/P = ((Y_{\text{last}} - Y_{\text{last-1}}) / (X_{\text{last}} - X_{\text{last-1}})) * (\text{Input value} - X_{\text{last-1}}) + Y_{\text{last-1}}$$

With **Interpolation not selected** and the input value being less than the minimum value in the table.

$$O/P = Y_1$$

With **Interpolation not selected** and the input value being greater than the maximum value in the table.

$$O/P = Y_{\text{last}}$$

Ppp	INPUT	vvvvv	OUTPUT	vvvvv
-----	-------	-------	--------	-------

pp Page Number (08 to 47) *System Generated*

v..v Input Value -99.9 to 999.9

This value is derived from a unique configuration of *F03*. Up to 40 Values may be configured.

Note: The input values **must** be entered in ascending order.

v..v Output Value -999.9 to 9999.9

This value is returned to a unique configuration of *F03*. This is the desired resultant value based on the input value configured on the same page.

FEATURE 20 – STATUS LED

14.1 STATUS LED OVERVIEW

This Feature allows the User to program the Status LED flash rate from within his applications. For system diagnostics, the LED is pre-programmed up to nine flashes and then a pause, to indicate system failure or error conditions. Flash rates greater than nine are use configurable.

14.2 TYPE OF FEATURE

User Interface

14.3 REFERENCE FEATURES

F02 - Analog Value
F03 - System Variable
F04 - Analog Value
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

14.4 SECTIONS

F20 STATUS LED S01 FLASH RATE:

This Feature is contained in one Section.

14.5 SUMMARY OF PAGES

Page 01	LED Status
Page 02	LED Control Input

P01 LED FLASHING vv	TIMES	vvvv
----------------------------	--------------	-------------

v..v Flash Rate

System Generated

v..v Flash Source

System Generated

The “Flash Rate” refers to the number of times the LED is flashing before a pause. If this number is nine or below, the flash rate corresponds to a given system error code.

Note: If the LED is locked **ON** or **OFF** the following conditions may exist: No Power, Hardware Error or EEPROM failure. If the LED flashes once every 1.6 seconds, the System is in a “Watchdog” state, also indicating a hardware failure. If the LED blinks regularly every 300 MS, the system is operating normally.

The Flash Rate Error Codes are as follows:

1 Flash	SYSTEM ERROR
2 Flashes	SYSTEM UNCONFIGURED
3 Flashes	SYSTEM HALTED or MONITOR MODE
4 Flashes	YORKTALK COMMS FAILURE
5 Flashes	THE NODE SWITCH - 127
6 Flashes	RESERVED
7 Flashes	RESERVED
8 Flashes	RESERVED
9 Flashes	RESERVED

F20 FLASH CNTRL sss tttttttttt vvvvv S01 FLASH RATE:

s .. s Flash Rate Input *User Entered*

t .. t Point Descriptor

vvvv Current Value

This is the analog value where by the User may input his own flash rate. **Note:** The **System** flash rates always have priority over any **User** configured flash rates.

Select From:

- F02 - Analog Value**
- F03 - System Variable**
- F04 - Analog Value**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

FEATURE 28 – ANALOG TRANSFER

15.1 ANALOG TRANSFER OVERVIEW

The Analog Transfer Feature provides a means of transmitting an **analog value** via the ISN Local Area network to either a **single** destination or to a **group** of destinations.

The trigger, which determines whether a transmission occurs or not, is dependant on a differential limit being exceeded and a delay interval timer expiring.

15.2 TYPE OF FEATURE

Communications

15.3 REFERENCE FEATURES

F02 - Analog Value
F03 - System Variables
F04 - Analog Value
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value
F57 - Network Group

15.4 SECTIONS

F28 ANALOG TRANSFER Snn OUTPUT No. nn
--

nn Section and Output Number System Generated

15.5 SUMMARY OF PAGES

Page 01	Analog Output Address and Value
Page 02	Status of Nodes
Page 03	Reserved
Page 04	Analog Transmission Delay
Page 05	Analog Differential
Page 06	Destination Feature and Section
Page 07	Destination Node(s)
Page 08	Destination Network

Page 09	Communications Channel Number
Page 10	Reserved
Page 11	Reserved
Page 12	Press Enter to Reset
Page 13	Reset Point
Page 14	Reset Mode

15.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 I/O sss tttttttttt vvvvvv

sss Analog Address *User Entered*

This is the Feature and Section address of an analog value within the local controller, which will be transmitted to a remote ISN controller.

The address of the destination ISN is identified on Page 07 and Page 08. (Node and Network number)

Select From:

- F02 - Analog Value**
- F03 - System Variables**
- F04 - Analog Value**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

t..t Descriptor *System Generated*

This is the descriptor text entered on Page 01 of the point address being specified.

v..v Value *System Generated*

This is the value shown on Page 01 of the address specified.

P04 ANALOG TRANSMISSION DELAY vv CYCLES
--

vv Time Delay *0 to 99*

This is a User configurable interval in multiples of System Cycles, which must elapse after the Analog differential set on Page 05 has exceeded before transmission occurs.

P05 ANALOG DIFFERENTIAL vvvvvv

v..v Analog Differential *0.0 to 9999.9*

This is the amount by which the analog value configured on Page 01 must change before an updated value is sent to the remote ISN.

If the analog value changes by an amount greater than the analog differential, but then falls back within limits before the analog transmission delay has expired, then the analog transmission delay will be **RESET**.

Unless interrupted by the delay on Page 10, analog differential of 0.0 causes continuous transmission every system cycle.

P06 DESTINATION F mmm S vv

mmm Destination Feature *Menu BBB*

This is a menu selectable field which defines the Feature, to which the analog transfer is to be sent.

vv Destination Section *01 to 99*

This field represents the Section number of either *Feature 02* or *Feature 27* at the Remote ISN controller, which will receive the value of the point as specified on Page 01.

P07 mmmmmmmmmmmmmmmmm vv

m..m Node or Group number

Menu UU

This menu selection allows the User to define the destination address of either a single node or a group of nodes.

The display will show either:

“DESTINATION NODE” or “DESTINATION” GROUP

vv Unit Node Number or Group Number

01 to 99

If a single destination has been selected, this field represents the **Unit's** node address. If multiple destinations have been selected, this field represents the address of the **Group** as specified in *F57*. (*Feature 57* may be used to define **5** destinations per section, with a maximum of **10** sections being available).

The menu options are:

Single Destination - the data is sent to the unit identified in the second field **vv**.

Multiple Destinations - the data is sent to the group of units identified by the second field **vv**. The value configured in this field refers to a specific section of *Feature 57 - Network Group*.

P08 DESTINATION NETWORK vv

vv Remote Destination Network

0 to 99

This is the Network address of the controller which will receive the transfer if the controller is local (on the same network). This is set to zero.

If transmitting from a Network other than *Net 00*, enter **99** to access *Net 00* (the base network).

P09 COMMUNICATION CHANNEL NUMBER m m Channel Number*Menu V*

This is the number of the communication's channel (or **PORT**), through which each update of the analog value will be transmitted; select either channel **1 (PORT1)** or channel **2 (PORT2)**.

P10 RESERVED**P11 RESERVED****P12 PRESS ENTER TO RESET**

From the Terminal Interface, it is possible for the user to force immediate data transfers without regard for the differential or delay. This is accomplished by entering the “**e**” value from the Terminal.

P13 RESET POINT : sss tttttttttt mmm

sss Point Address *User Entered*

This is the address of the digital point, which will re-initialise the transfer if in the same state as the reset mode on Page 14.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Point Text *System Generated*

This is the descriptor entered on Page 01 of the point address being specified.

mmm Point Status *System Generated*

This is the current status of the point defined.

P14 RESET MODE = mmmm

m..m Reset State for Menu D *Menu D*

This is the state (“**OPEN**” or “**MADE**”) that the reset point must be in, to allow the transfer re-initialisation to occur.

FEATURE 29 – DIGITAL TRANSFER

16.1 DIGITAL TRANSFER OVERVIEW

The Digital Transfer Feature provides a means of transmitting a **digital status** via the ISN Local Area network to either a single destination or to a group of destinations.

The trigger, which determines whether a transmission occurs or not, is dependant on the change of state occurring and a delay interval timer expiring.

16.2 TYPE OF FEATURE

Communications

16.2 REFERENCE FEATURES

F01 - Digital Status
 F05 - Digital Status
 F06 - Digital Status
 F57 - Network Groups

16.3 SECTIONS

F29 DIGITAL TRANSFER Snn OUTPUT No. nn

nn Section and Output Number *System Generated*

16.4 SUMMMARY OF PAGES

Page 01	Digital Transfer Output Address and Status
Page 02	Status of Nodes
Page 03	Reserved
Page 04	Digital Transmission Delay
Page 05	Destination Feature and Section
Page 06	Destination Node(s)
Page 07	Destination Network
Page 08	Communications Channel Number
Page 09	Reserved
Page 10	Reserved
Page 11	Press Enter to Reset
Page 12	Reset Point
Page 13	Reset Mode

16.5 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 I/O sss tttttttttt mmmm

sss Remote Analog Output Address *User Entered*

This is the Feature and Section address of a digital input or output within the local controller, whose status will be transmitted to a remote ISN controller.

The address of the destination ISN is identified on Page 06 and Page 07.

Select From:

- F01 - Digital Status**
- F05 - Digital Status**
- F06 - Digital Status**

t..t Descriptor *System Generated*

This is the descriptor text entered on Page 01 of the point address being specified.

m..m Current Status *System Generated*

This is the status shown on Page 01 of the address specified.

P02 X X X X X X X X X X X X X X

X Transmission Status *System Generated*

Page 02 is used to display the current status of the destination configured on Page 06. The User may either configure a single destination or a group, comprised of multiple destinations.

Every time a transmission occurs, the status of that transmission is monitored and displayed on Page 02.

A number of codes are used to show the status of each transmission. They are listed below:

BLANK	=	No destination has been configured.
S	=	The controller has successfully received a reply from the destination unit.
W	=	The controller is waiting for a reply from that particular destination.
1	=	NOT relevant to this Feature.
2	=	NOT relevant to this Feature.
3	=	An attempt was made to transmit a message to an invalid Section.
4	=	An attempt was made to transmit a message to an input which was already being used.
5	=	An attempt was made to transmit a message to a Feature and Section which were not configured to be in the REMOTE mode.

P03 RESERVED

P04 DIGITAL TRANSMISSION DELAY <i>nn</i> CYCLES
--

nn Time Delay

0 to 99

This is a User configurable interval in multiples of System Cycles which must elapse, with the change of state remaining stable, before transmission occurs.

P05 DESTINATION F mmm S vvv

mmm Destination Feature

Menu CCC

This is the Feature to which the digital transfer is to be sent.

vvv Destination Section

01 to 99

This field represents the Section number of a *Feature 05* at the Remote ISN controller, which will receive the status of the point as specified on Page 01.

P06 mmmmmmmmmmmmmmmmmmm vvv

m..m Node or Group number

Menu UU

This menu selection allows the User to define the destination address of either a **single** node or a **group** of nodes. The display will show either:

DESTINATION NODE or DESTINATION GROUP

vv Unit Node Number or Group Number

01 to 99

If a single destination has been selected, this field represents the unit's node address. If multiple destinations have been selected this field represents the address of the Group as specified in *F57*.

(*Feature 57* may be used to define **5** destinations per section, with a maximum of **10** sections being available).

The menu options are:

Single Destination - the data is sent to the unit identified in the second field **vv**.

Multiple Destination - the data is sent to the group of units identified by the second field **vv**. The value configured in this field refers to a specific section of *Feature 57 - Network Group*.

P07 DESTINATION NETWORK vv

vv Remote Destination Network *0 to 99*

This is the Network address of the controller which will receive the transfer if the controller is local (on the same network). This is set to zero.

If transmitting from a Network other than *Net 00*, enter **99** to access *Net 00* (the base network).

P08 COMMUNICATION CHANNEL NUMBER m

m Channel Number *Menu V*

This is the number of the communication's channel, (or **PORT**) through which each update of the analog value will be transmitted. Select either Channel **1 (PORT 1)** or Channel **2 (PORT 2)**.

P09 RESERVED**P10 RESERVED****P11 PRESS ENTER TO RESET**

From the Terminal Interface, it is possible for the user to force immediate data transfers without regard for the differential or delay. This is accomplished by entering the “**e**” value from the Terminal.

P12 RESET POINT : sss tttttttttt mmm

sss Point Address *User Entered*

This is the address of the digital point, which will re-initialise the transfer if in the same state as the reset mode on Page 13.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Point Text *System Generated*

This is the descriptor entered on Page 01 of the point address being specified.

mmm Point Status *System Generated*

This is the current status of the point defined.

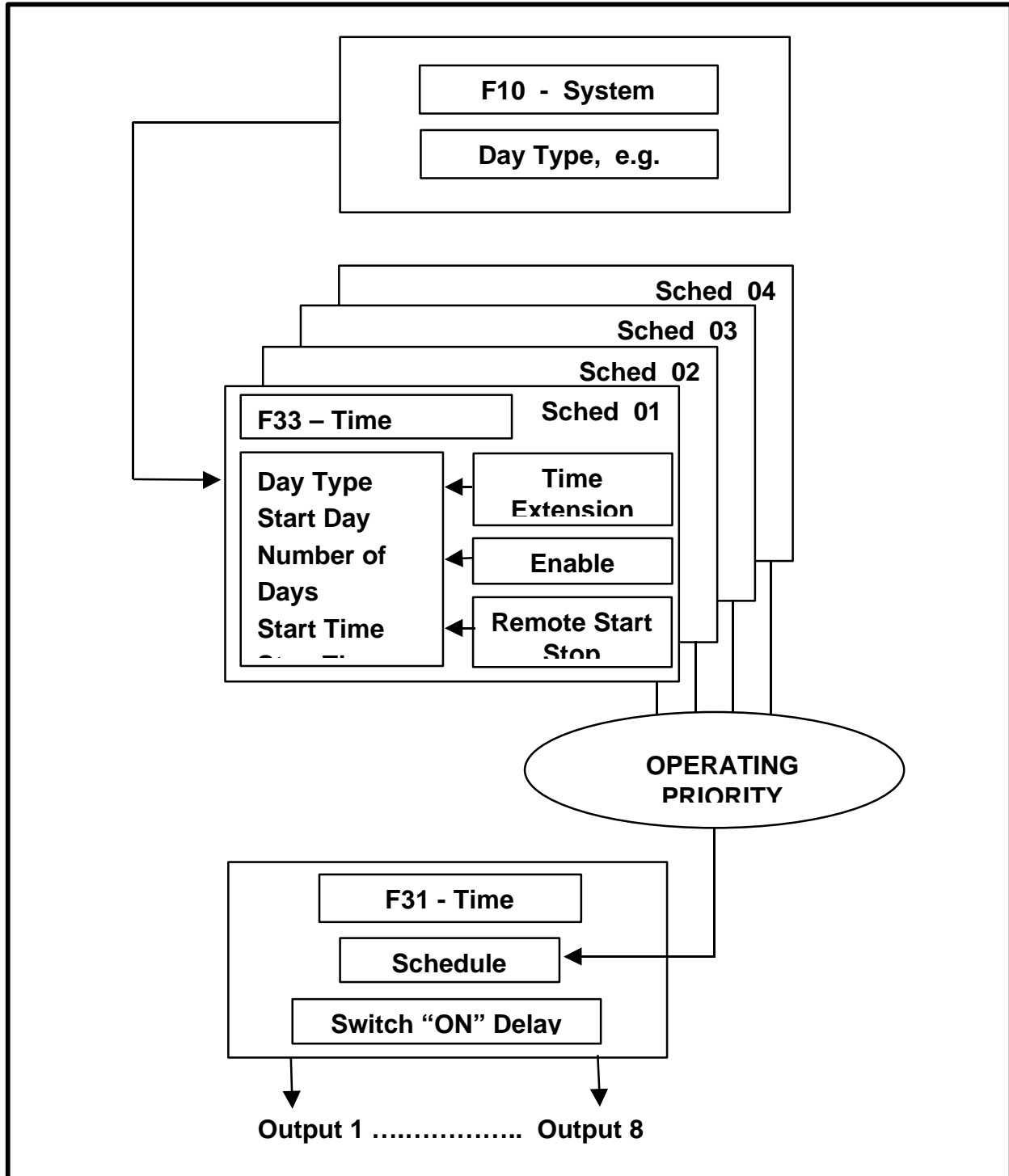
P13 RESET MODE = mmmm

m..m Reset State *Menu D*

This is the state (**“OPEN or MADE”**), that the reset point must be in to allow the transfer re-initialisation to occur.

FEATURE 31 - TIME PROGRAMS

17.0 - GRAPHIC OVERVIEW OF OPERATION



17.1 FEATURE 31 - TIME PROGRAMS

The Time Programs Feature is used to control Digital Status Points according to the time of day. Each Section may switch up to **eight** points.

17.2 TYPE OF FEATURE

Control

17.3 REFERENCE FEATURES

F01 - Digital Status
F05 - Digital Status
F06 - Digital Status
F10 - System Calendar
F33 - Time Schedules

17.4 SECTIONS

F31 TIME PROGRAMS Snn PROGRAM No. nn

nn Section and Program Number

System Generated

17.5 SUMMARY OF PAGES

Page 01 **Current Status**
Page 02-09 **Attached Digital Status**
Page 10-13 **Schedule Reference**
Page 14-21 **Output Address**
Page 22 **Switching Priority**
Page 23 **Switching on Delay**

17.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 TIME PROGRAM STATUS mmmm

m..m Current Status *System Generated*

This shows the current status of the Time Program. i.e. "**ON**" or "**OFF**".

The assigned Digital Status **ON/OFF** points may be in the opposite state to that indicated by the Time Program's status, due to the influence of other control Features.

Pnn tttttttttt mmm STOPS AT hhhh

Pnn Page Number (02 to 09) *System Generated*

Up to **eight** Digital Status **ON/OFF** points (01 to 08) may be associated with each Section as specified on Page 14 through to Page 21 inclusively.

Page 02 through to Page 09 will show the current status of these points.

t..t Descriptor *System Generated*

This is the descriptor entered on Page 01 of the point attached to the Section and Page of the Time Program being displayed.

mmm Point Status *System Generated*

This is the status of the Digital Status **ON/OFF** points attached to the Section and Page of the Time Program being displayed.

hhhh Stop Time

User Entered

This shows the time at which the point will be switched “**OFF**” by the system. The User can override this on a point by point basis by simply entering the stop time required. The system will revert back to the programmed stop time at midnight.

A Stop Time of 2400 indicates that the output will remain “**ON**” through the midnight barrier, when the next day's schedule will take effect.

Pnn SCHEDULE NUMBER n vv tttttttttt
--

Pnn Page Number (10 to 13)

System Generated

n Schedule Number (1 to 4)

System Generated

This Page is used to reference *Feature 33*. These determine the switching times of the points attached to the time program.

vv Schedule Reference

This is the section number of *Feature 33 - Time Schedules*, which contains the switching times for the outputs.

t..t Descriptor

System Generated

This is the descriptor entered on Page 01 of *F33 - Time Schedules* being referenced.

Pnn OUTPUT n sss tttttttttt

Output Address

Pnn Page Number (14 to 21) *System Generated*

n Physical Output Number (1 to 8) *System Generated*

sss Address *User Entered*

This is the address of the Digital Status digital point being time managed.

The current status of each output is shown on Page 02 through to Page 09 respectively.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor *System Generated*

This is the descriptor text entered on Page 01 of the point address being specified.

P22 SWITCHING PRIORITY mmm*mmm* Logic Priority*Menu H*

This page defines the logic priority which governs the control of the outputs. One of the following two logical states must be chosen:

- "AND" - Logical AND
- "OR" - Logical OR

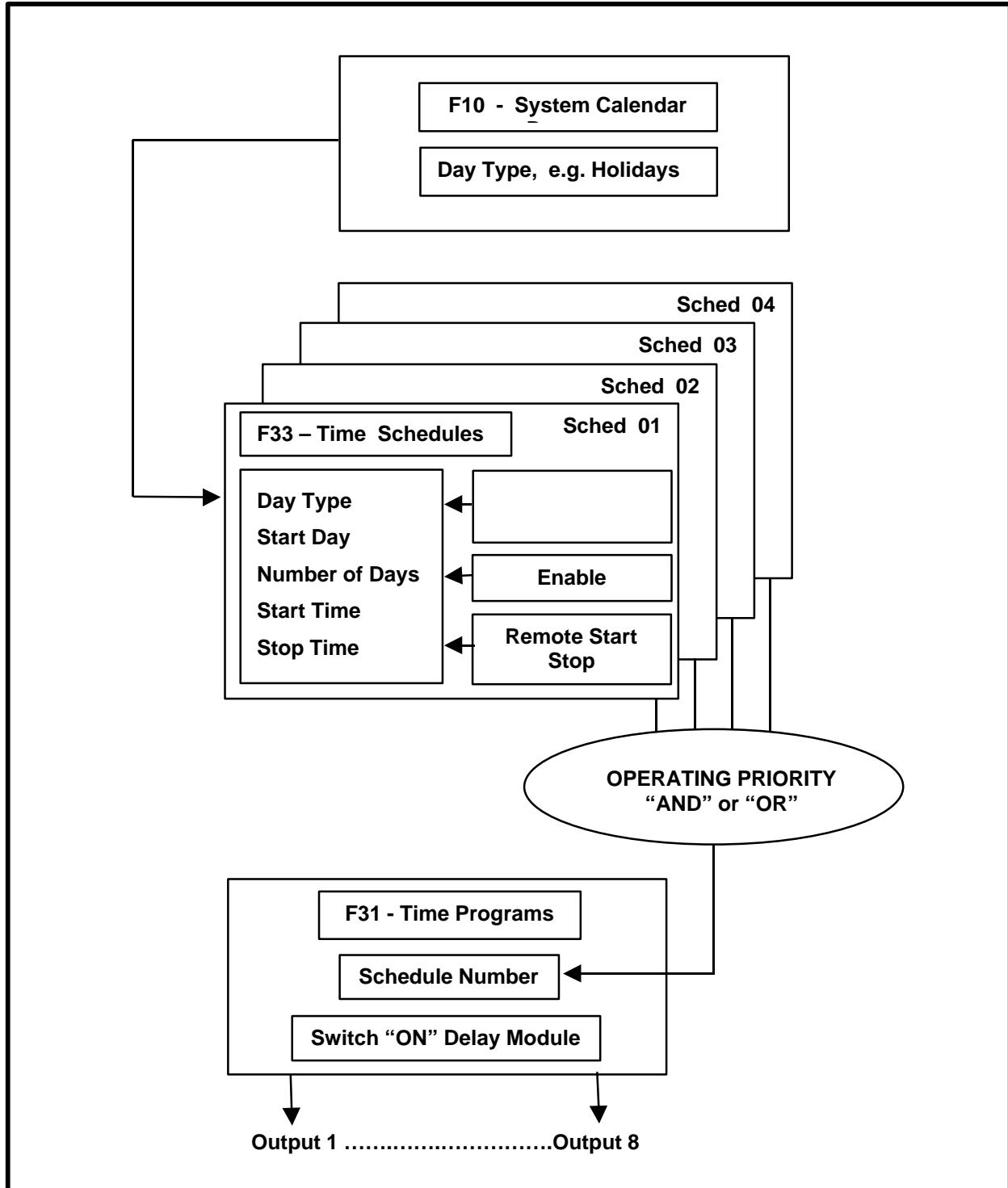
This feature may be calling for a particular output to be **ON**. However, if the priority has been configured as "**AND**", another influence in the system could hold the output **OFF**.

P23 SWITCH ON DELAY vvv CYCLES*v..v* On Delay*0 to 999*

This is the delay between each output point in the program being switched **ON**.

FEATURE 33 - TIME SCHEDULE

18.0 GRAPHIC OVERVIEW OF OPERATION



18.1 FEATURE 33 - TIME SCHEDULE

This Feature provides the User with the ability to enter a table of switching times, which may then be referenced by *F31 - Time Programs*.

Each table contains a number of switching times with associated day types. Each day type has a priority which governs which switching times are to be used.

18.2 TYPE OF FEATURE

Control

18.3 REFERENCE FEATURES

- F01 - Digital Status**
- F02 - Analog Value**
- F03 - System Variables**
- F04 - Analog Value**
- F09 - Analog Value**
- F05 - Digital Status**
- F06 - Digital Status**
- F10 - System Calendar**
- F31 - Time Program**

18.4 SECTIONS

F33 TIME SCHEDULE Snn tttttttttt

<i>nn</i>	Section and Schedule Number	<i>System Generated</i>
<i>t..t</i>	Schedule Descriptor	<i>System Generated</i>

This is the descriptor assigned to this schedule as defined on Page 01.

18.5 SUMMARY OF PAGES

Page 01	Schedule Title
Page 02-29	Start/Stop Time
Page 30	Today's Start & Stop Times
Page 31	Reset
Page 32	Remote Extension Time
Page 33	Remote Extension Point
Page 34	Extension State
Page 35	Extension Cancel
Page 36	Enable Point
Page 37	Enable Sense
Page 38	Priority
Page 39	Start Destination
Page 40	Stop Destination
Page 41	Reserved
Page 42	Remote Start
Page 43	Remote Stop

18.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt mmm STOP TIME hhmm mmm
--

t..t Schedule Name *User Entered Text or Menu*

This is a 12 character free text descriptor used to name the schedule.

mmm Schedule Status *System Generated*

This field defines the status, reflecting whether the program is calling for the outputs to be **“ON”** or **“OFF”**.

hhmm Stop Time *System Generated*

This is the next time when the schedule will be switched **“OFF”**.

mmm Extension Status *System Generated*

If the time program is remotely extended via the configured point on Page 33, the text **“EXT”** will be displayed in this field.

Pnn mmm vv vv START hhhh STOP hhhh mmmmmm

Schedule Start and Stop times.

Pnn Page Number (02 to 29) *System Generated*

These Pages contain the Time Program Start and Stop data.

m..m Day Type *Menu J*

This field contains the day type which must be current for the Time program to become active.

Each day type has a priority. Day types, which are active and have a higher priority than those which may also be active but have a lower priority, will have their **ON/OFF** output commands overridden.

The Day type priorities are listed below:

- i. **REMOTE START/STOP**
- ii. **JAN-DEC Single Day Duration**
- iii. **JAN-DEC Multi Day Duration**
- iv. **HOLIDAYS 1-18**
- v. **HOLIDAY ALL**
- vi. **MONDAY through SUNDAY (All equal priority)**
- vii. **WEEKDAYS**
- viii. **WEEKEND**

vv Start Day *1 to 31*

When specified in conjunction with a month, this field represents the first day the schedule will be active.

When specified in conjunction with a holiday, this value is used to reference the holiday dates as assigned in *F10 - System Calendar*.

If **"HOL"** is specified and this field is set to 0, then this will cause the assigned times to be active on **all** the holiday dates that have been assigned in *F10 - System Calendar*. If **"HOL"** is specified and this field is set to 17, then this will reference the date and duration as configured on Page 22 of *F10*.

It is possible to specify the start and stop times for the whole month of May (Multi Day Setting) to be 8.00am to 5.00pm respectively.

The User may also specify the 12th of May to have a start time of 6.00am and a stop time of 7.00pm. Both day types are active, but the single day time has a higher priority than the Multi Day type setting and therefore will dictate the result.

vv Number of Days *1 to 99*

This is the duration used if months have been specified. Otherwise, this field is ignored.

Any holiday period will end at midnight on the last day specified. A minimum of **1 day** must be specified for the holiday date to be valid.

hhhh Start Time *24 Hour Clock*

This is the time when the Time Program will become active.

hhhh Stop Time *24 Hour Clock*

This is the time when the Time Program will be cancelled.

Switching times assigned to individual holiday day numbers and to holiday "**ALL**", will only operate on the date assigned in *F10 - System Calendar*.

mmm Reset Function *Menu QQ*

This field is used to determine whether a particular set of times are temporary, "one shot", or permanent in their use.

One of **three** states is available:

"FIX" This means that the times are permanent and will be active on the defined days.

"RST" This means that the times will only be active for the day, date and duration specified, at the end of which they will no longer be able to influence the schedule. This field will then be set to **"EXP"**.

“EXP” This means that the times are disabled from influencing the schedule. This can be set manually to disable a set of times, or will be set automatically if it was previously set to **“RST”** and the day, date and duration have expired.

Note: If these fields are set via a configuration download, they will be re-entered when a down-load occurs, which may result in previously cancelled dates becoming active!

P30 START = hhmm STOP = hhmm nnn

hhmm Time of Day

System Generated

These two fields show the next start and stop time for the current day. These values will change throughout the day on multiple start/stops.

nnn Schedule Mode

System Generated

This field shows if the schedule is extended **“EXT”** or if the schedule is being controlled by remote times **“REM”**.

P31 PRESS ENTER TO RESET SCHEDULE

If a time schedule is edited, the new times will become effective at midnight. If the times are required to become effective immediately, it may be done by the User from the Terminal Mode. This is accomplished by entering the **“e”** value from the Terminal.

P32 EXTENSION TIME vvv MINUTES

Program Extension Period.

v..v Extension Time

0 to 999

This is the amount of time in minutes that will be added to the **Current Time (F10)**, to produce the new extended Stop Time.

If this new Stop Time falls before the original Stop Times specified on Pages 02 through to Page 29, then the original Stop Times are maintained. The time program must be initially in the "**MADE**" state for the "**ON**" period to be extended.

If the time program is already "**OFF**", then the points will be returned "**ON**" for the extension time specified.

The extension time becomes active when the extension input specified on Page 33 is "**MADE**" momentarily.

Extension times are not accumulated.

P33 EXTENSION INPUT sss tttttttttt mmm

sss	Extension Input Identifier	<i>User Entered</i>
-----	----------------------------	---------------------

This page provides a global method of extending the Time Programs on a section-wide basis.

All of the digital outputs as specified in *F31 - Time Programs*, which are being controlled by one Section of *F33*, may have their time of operation extended, provided the point specified in this page remains in the same state as the Extension Sense P34 for more than one cycle.

The Extension Time or Extension Stop will not be activated until the input has been released back to the opposite of the Extension Sense.

The controller will then determine how long the input was in the matched state and therefore whether it is an Extension Start, or if P35 Extension Stop has been set to "**YES**" and the state held for longer than 5 seconds - an Extension Stop.

The Time Programs will be extended for the time specified on Page 32, or if the Time Program is currently set to "**OFF**", it will be brought back "**ON**" for this period of time.

Where an optimiser is referencing a section that has been extended, the self learning process will not be executed for that day.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor

System Generated

This is the descriptor entered on Page 01 of the point address specified.

P34 EXTENSION SENSE mmmm

mmm Extension Point Sense

Menu D

This is the state the extension point specified on Page 33 must equal to implement the extension period.

P35 EXTENSION STOP mmm

mmm Extension Stop Request

Menu N

If this page is set to “**YES**” the extension point can also be used as a cancel button. If depressed for more than **5** seconds, any active extension period will be cancelled.

P36 ENABLE POINT sss tttttttttt mmm
--

sss Point Address *User Entered*

This is the address of a digital point that will allow the schedule to be active when it's status matches that specified on Page 37, or inactive when it's status is opposite.

When disabled, any Features referencing the schedule will act as if no start / stop times have been specified for the current day i.e. they will be held **"OFF"**.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Point Descriptor *System Generated*

This is the descriptor entered on Page 01 of the point address specified.

mmm Point Status *System Generated*

This is the status of the point addressed.

P37 ENABLE SENSE mmm

mmm Enable Sense *Menu D*

This page is used to specify the sense, in which the enable point must be in to allow the schedule to exert an influence on any referencing Features.

If no enable point is specified this page must be set to **"MADE"** for the schedule to become active.

P38 mmm PRIORITY

mmm Priority*Menu H*

This page defines the "logic priority". This section will assume, when used in conjunction with other schedules.

This only applies to *F31 - Time Programs* which is able to reference up to **4 schedules** per day.

For example, if Page 38 has been set to "**AND**" and *F31* is referencing more than one schedule, then for the outputs as specified in *F31* to be turned "**ON**", all the sections within *F33* must be activated.

If in the above example, Page 38 was set to "**OR**", then any section being activated would allow the outputs in *F31* to be turned "**ON**".

P39 ADDR NEXT TIM START sss tttttttttt

sss Start Data Destination*User Entered*

This is the address of a Feature and Section, which may be used to display the Start Time of the schedule so that it may be used elsewhere in the system.

Select From:

F02 - Analog Value
F04 - Analog Value
F07 - Analog Value
F09 - Analog Value

t..t Point Descriptor*System Generated*

This is the descriptor entered on Page 01 of the point address specified.

P40 ADDR NEXT TIM STOP sss ttttttttttt

sss Stop Data Destination

User Entered

This is the address of a Feature and Section, which may be used to display the Stop Time of the schedule so that it may be used elsewhere in the system.

Select From:

F02 - Analog Value

F04 - Analog Value

F07 - Analog Value

F09 - Analog Value

t..t Point Descriptor

System Generated

This is the descriptor entered on Page 01 of the point address specified.

Note: The values used by Page 39 and Page 40 will only apply for the current day. The following day's values are updated at midnight.

P41 RESERVED

P42 REM START sss ttttttttttt vvvvvv

sss Point Address

User Entered

This is the address of an analog point that will supply a value to be used as the “**START**” time for the program.

Select From:

F02 - Analog Value

F03 - System Variables

F04 - Analog Value

F07 - Analog Value

F08 - Conditional Logic

F09 - Analog Value

t..t Point Descriptor *System Generated*

This is the descriptor entered on Page 01 of the point address specified.

v..v Point Value *System Generated*

This is the value of the point addressed.

P43 REM STOP sss tttttttttt vvvvvv

sss Point Address *User Entered*

This is the address of an analog point that will supply a value to be used as the “**STOP**” time for the program.

Select From:

- F02 - Analog Value**
- F03 - System Variables**
- F04 - Analog Value**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

t..t Point Descriptor *System Generated*

This is the descriptor entered on Page 01 of the point address specified.

v..v Point Value *System Generated*

This is the value of the point addressed.

When the value supplied from either the Remote start or the Remote stop is **not** zero and corresponds to a valid twenty- four hour clock time (hours and minutes before the decimal point), then the time is taken into account and will override all other switching times for the day.

If the supplied Remote times are zero or are invalid, then the schedule will search for the next highest priority for that day.

F39 – ANALOG INTERLOCK

19.1 ANALOG INTERLOCK OVERVIEW

The Analog Interlock Feature allows the control of up to four Digital Status Points based on a comparison being made between a value received from an analog point and two pre-defined limits.

Each section of this Feature provides one "comparator" function. Several sections may be logically combined using "**AND**" or "**OR**" logic to influence up to four digital outputs.

This Feature allows the User to insert delays between the controlling point requesting a change in the output and the output actually responding.

19.2 TYPE OF FEATURE

Control

19.3 REFERENCE FEATURES

F01 - Digital Status
F02 - Analog Value
F03 - System Variables
F04 - Analog Value
F05 - Digital Status
F06 - Digital Status
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

19.4 SECTIONS

F39 ANALOG INTLOCK Snn INTERLOCK nn
--

nn Section & Interlock No.

System Generated

19.5 SUMMARY OF PAGES

Page 01	Current Status
Page 02	Low Control Settings
Page 03	High Control Settings
Page 04	Logic Priority
Page 05	Input Address
Page 06-09	Output Addresses
Page 10	Delay Time
Page 11	Timer Reset

19.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt vvvvvv mmm DELAY vvvv

Measured Input

t..t Descriptor *System Generated*

This is the descriptor entered on Page 01 of the point address specified on Page 05.

v..v Current Value *System Generated*

This is the analog value currently being received from the point address specified on Page 05, governing the operation of the Analog Interlock.

mmm Output Value *System Generated*

This field shows the status of the outputs compared with the analog input point.

v..v Delay Counter *System Generated*

If a delay has been specified on Page 10, then the amount of time left before the timer expires is displayed here.

P02 LO MADE AT vvvvvv LO OPEN AT vvvvvv

Made State Switch

v..v Made State Switch Value -999.9 to 9999.9

The Digital Status Points being controlled by this Section will be changed to the "**OPEN**" state when the analog value "passes through" the value shown in this Field.

The relationship defined on this Page will determine whether the switching action occurs when the value rises or falls through the values specified.

v..v Open State Switch Value -999.9 to 9999.9

Note: If two conditional comparison states are used, the values of the first or lower condition belong on page 2.

If only one conditional comparison state is used, the values belong on Page 2

P03 HI MADE AT vvvvv HI OPEN AT vvvvv

The Digital outputs being controlled by this Section will be changed to the "**MADE**" state when the analog value "passes through" the value shown in this Field.

For Example: When the controller is initially powered up, the software checks the value of the Measured Input (**v**) (configured on Page 05) against the two values (**V1** and **V2**) configured on Page 02 and/or Page 03.

If the value **v** is greater than the highest of the two values, **V1** and **V2**, then the controller will switch the outputs to the state associated with the highest value.

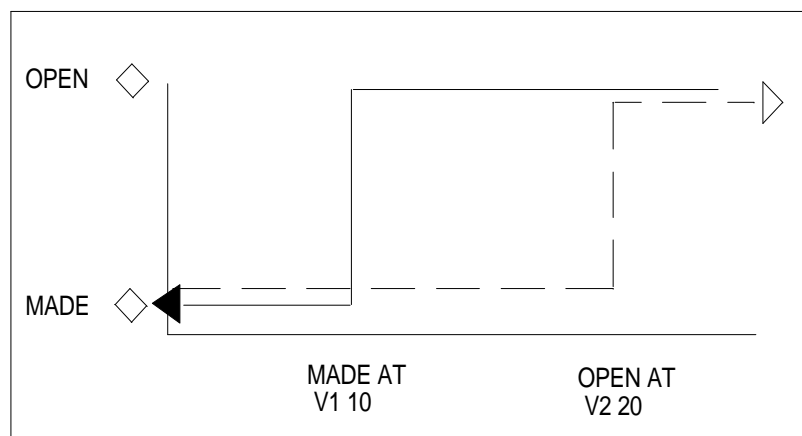
If the value **v** is below the lowest of the two values **V1** and **V2**, then the controller will switch the outputs to the state associated with the lowest value.

If the value v is between $V1$ and $V2$, the controller will take no action and the outputs will be in the **OFF** state.

In this example, after power has been applied with the input value being **5**, the outputs will be switched **ON**. With the input value being **15**, the outputs maintain at **OFF**. With the input value being **25**, the outputs will be switched **OFF**.

Note: If two conditional comparison states are used, the values of the second or higher condition belong on Page 3.

If only one conditional comparison state is used, the values belong on Page 2.



P04 mmm PRIORITY

mmm Logic Priority

Menu H

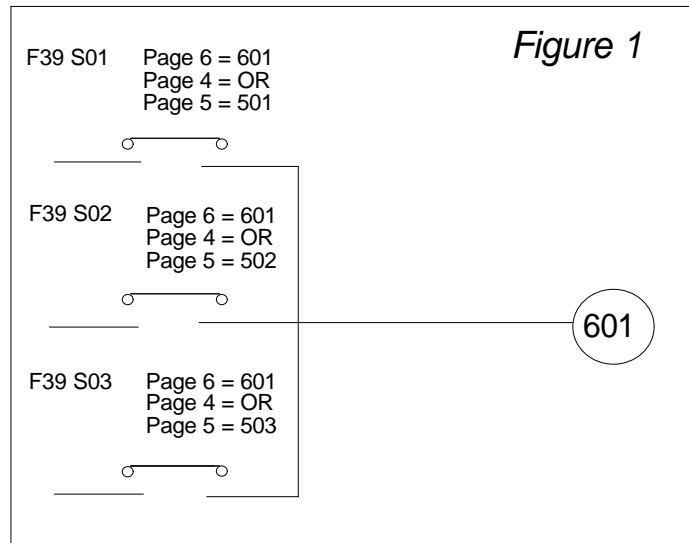
An Analog Interlock must be set to one of two logical states:

"AND" - Logical **AND**
 "OR" - Logical **OR**

These logic operators allow the User to define the way, in which this section of this Feature will influence the outputs when there are other functional blocks wishing to effect the same outputs.

If the **"OR"** operator has been specified in **ALL** of the blocks related to the same output, then **ANY** one commanding this output to be **"MADE"** will be honored.

If the **"AND"** operator has been specified in **ANY** of the blocks related to the same output, then **ALL** of the functional blocks must be commanding this output to be in the **"MADE"** state for the output to be **"MADE"**.



In *Figure 1* above, **ANY** of the three interlocks being **"MADE"** will turn 601 **ON**. **501**, **502** and **503** are the points used as the triggering inputs to the interlocks.

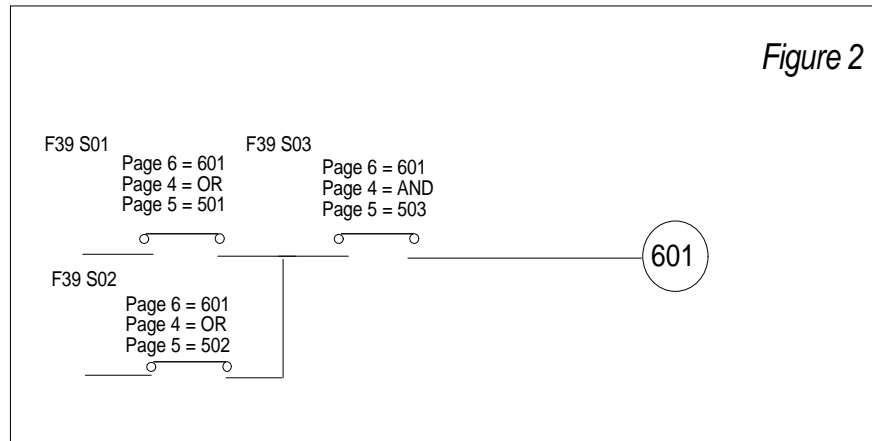


Figure 2 above, since **F39 S03** has been set to an “**AND**” operator, then **F39 S03** and either **F39 S01** or **F39 S02** have to be “**MADE**” for the output 601 to be turned **ON**.

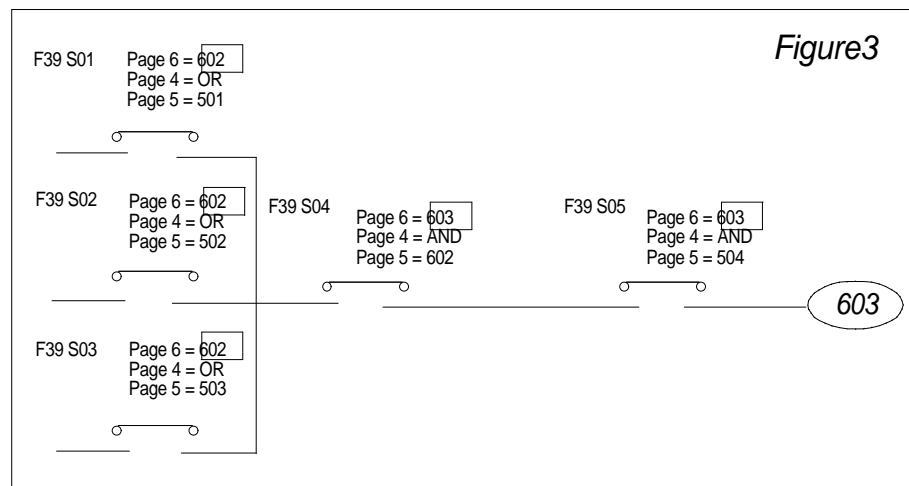


Figure 3 above shows a combination of **AND/OR** logic. For 603 to be turned **ON**, both **F39 S04** and **F39 S05** interlocks must be in the “**MADE**” state.

For the **F39 S04** interlock to be “**MADE**”, one of the following interlocks must also be “**MADE**”: **F39 S01**, **F39 S02**, or **F39 S03**.

P05 CONTROLLING I/O sss tttttttttt

sss Measured Input Address *User Entered*

This is the address of the analog point, whose value controls the switching relationship specified on Page 02 and/or Page 03.

Select From:

- F02 - Analog Value**
- F03 - System Variables**
- F04 - Analog Value**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

t..t Descriptor *System Generated*

This is the descriptor entered on Page 01 of the point address specified.

Pnn CONTROLLED O/P n sss tttttttttt
--

Pnn Page Number (06 to 09) *System Generated*

n Output Number (1 to 4) *System Generated*

Up to 4 outputs may be specified.

sss Digital Status Points *User*

Entered

This is the address of the Switched Control digital output, whose state is being controlled by this interlock.

Select From:**F01 - Digital Status****F05 - Digital Status****F06 - Digital Status***t..t* Descriptor*System Generated*

This is the descriptor entered on Page 01 of the point address specified.

P10 MADE DELAY vvvv OPEN DELAY vvvv
--

v..v Delay Time*0 to 9999 Cycles***Made Delay**

This is the delay period in System Cycles, which must elapse before the outputs will be switched into the "**MADE**" state.

This delay is invoked when the output has been commanded to switch from the "**OPEN**" to the "**MADE**" state.

Open Delay

This is the delay period in System Cycles which must elapse before the outputs will be switched into the "**OPEN**" state.

This delay is invoked when the output has been commanded to switch from the "**MADE**" to the "**OPEN**" state.

If both delays have been configured, then only one of the delays will ever be active at any point in time.

P11 TIMER RESET mmmmmmmmmmmmmmmmmmmmmmmmm
--

Mmm Setting Select

Menu KKK

Two choices are available:

“ORIGINAL DELAY SETTINGS”

“REMAINDER OF LAST DELAY”

This Page gives the User control over any delay times configured on the previous page. Two choices are available: **last delay** and **original delay**.

Both selections refer to when the Feature has resolved a condition (either **“MADE”** or **“OPEN”** a configured on the previous page) and the delay begins. If, during the course of the delay, the condition changes and then once again returns, the User has tow options for handling the delay.

If the selections is: **“REMAINDER OF LAST DELAY”**, when the condition returns, the delay continues from where it left off and proceeds to count down.

If the selection is: **“ORIGINAL DELAY SETTINGS”**, when the condition returns, the delay time reset to it original value and proceeds to the count down.

FEATURE 40 – DIGITAL INTERLOCK

20.1 DIGITAL INTERLOCK OVERVIEW

The Digital Interlock Feature allows the control of up to four Digital Status points based on the state of one or two digital points.

One Digital Status point may be commanded by more than one Digital Interlock Section. It is also possible to have multiple outputs, controlled by the same digital point within a section.

The contact states of a series of digital points can be grouped together to manage a shared Digital Status point by using "**AND**" or "**OR**" logic conditions. Within the Feature, traditional logical elements (**AND, OR, NOR, ETC**) can be used to test the combined inputs.

This Feature allows the User to insert delays between the controlling point requesting a change in the output and the output actually responding.

20.2 TYPE OF FEATURE

Control

20.3 REFERENCE FEATURES

F01 - Digital Status
F02 - Analog Value
F03 - System Variables
F04 - Analog Value
F05 - Digital Status
F06 - Digital Status
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

20.4 SECTIONS

F40 DIGITAL INTLOCK Snn INTERLOCK nn

nn Section & Interlock No.

System Generated

20.5 SUMMARY OF PAGES

Page 01	Current Status
Page 02	Commanded Switch State
Page 03	Input A
Page 04	Input B
Page 05	Status Point Address
Page 06-09	Output Addresses
Page 10	Delay Time
Page 11	Timer Reset

20.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 m 000 mmm m 000 mmmm DELAY VVV CYCLES
--

m Not Operator *System Generated*

000 Input Address *System Generated*

mmm Linking Operator *System Generated*

The input addresses reflect the configurations made on P03 and P04. The **Not Operator (~)** and the **Linking Operators** are chosen on P02.

m..m Digital Status *System Generated*

This is the current binary state of the Feature as applied to the outputs on P06 - P09. It is either **“MADE”** or **“OPEN”**.

v..v Delay Counter *System Generated*

If a delay has been specified on P10, then the amount of time left before the time expires is shown here.

P02 m 000 mmm m ppp

m Not Operator *Menu LLL*

This selection causes the address to be "**TRUE**" or "**NOT TRUE**.
(~).

000 *System Generated*

The address of the Inputs A and B as configured on P03 and P04.

mmm Boolean operator
Menu MMM

This is the linking Boolean operator.

For example : "**AND**", "**NAND**" "**NE**", "**OR**", "**NOR**", and "**XOR**".

P03 INPUT A sss tttttttttt mmmm
--

sss Input A *User Entered*

This is the address of the first input value.

Select from:

F01 - Digital Status
F05 - Digital Status
F06 - Digital Status

t...t Descriptor *System Generated*

The text descriptor of the selected input point A.

m...m Current Status *Menu D*

This shows the current state of the selected input A.

P04 INPUT B sss tttttttttt mmmm
--

sss Input B

User Entered

This is the address of the first input value.

Select from:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t...t Descriptor

System Generated

The text descriptor of the selected input point B.

m...m Current Status

Menu D

This shows the current state of the selected input B.

P05 mmm PRIORITY

mmm Logic Priority

Menu H

A Digital Interlock must be set to one of two logical states:

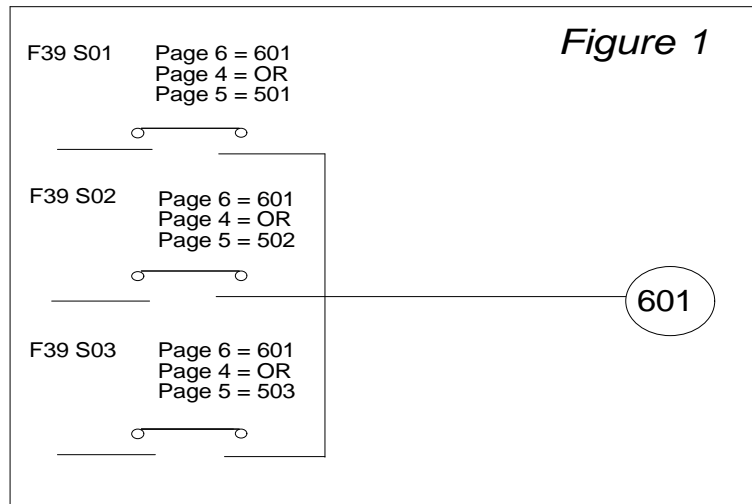
"AND" - Logical **AND**

"OR" - Logical **OR**

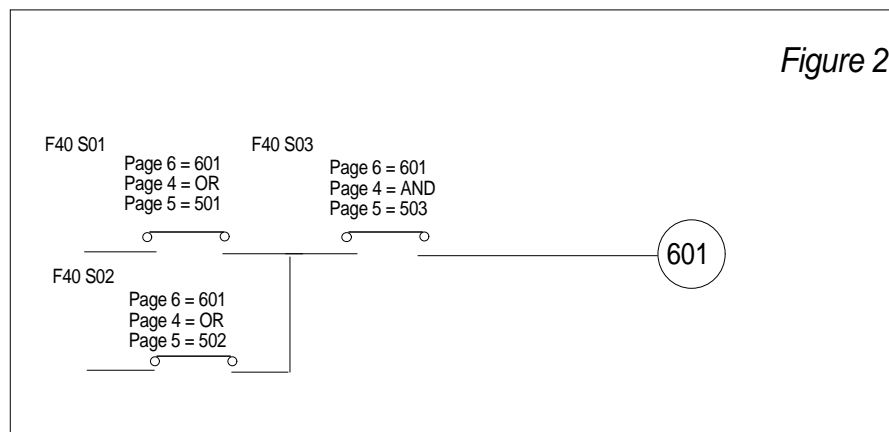
These logic operators allow the User to define the way, in which this section of this feature will influence the outputs when there are other functional blocks wishing to effect the same outputs.

If the "**OR**" operator has been specified in **ALL** of the blocks related to the same output, then **ANY** one commanding this output to be "**MADE**" will be honoured.

If the "**AND**" operator has been specified in **ANY** of the blocks related to the same output, then **ALL** of the functional blocks must be commanding this output to be in the "**MADE**" state, for the output to be "**MADE**".



In *Figure 1* above, **ANY** of the three interlocks being “**MADE**” will turn 601 **ON**. **501**, **502** and **503** are the points used as the triggering inputs to the interlocks.



In *Figure 2* above, since **F40 S03** has been set to an “**AND**” operator, then **F40 S03** and either **F40 S01** or **F40 S02** have to be “**MADE**” for the output 601 to be turned **ON**.

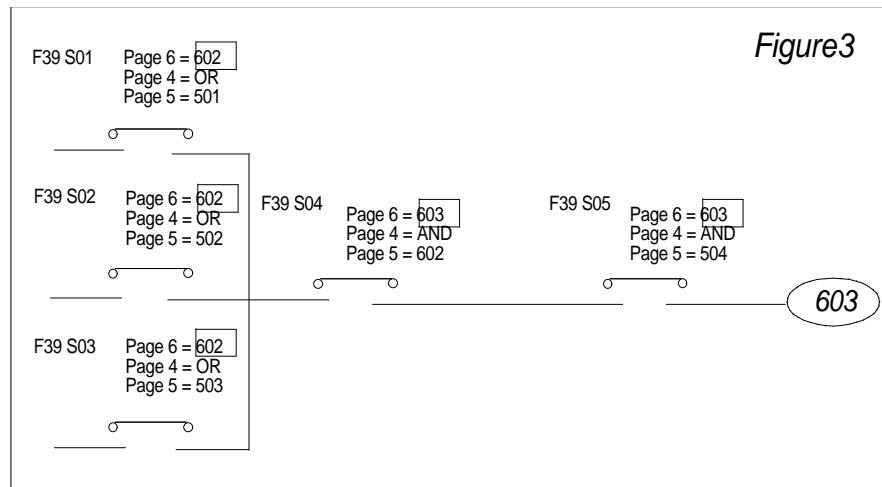


Figure 3 above, shows a combination of **AND/OR** logic. For 603 to be turned **ON**, both **F40 S04** and **F40 S05** interlocks must be in the **“MADE”** state.

For the **F40 S04** interlock to be **“MADE”**, one of the following interlocks must also be **“MADE”**: **F40 S01**, **F40 S02**, or **F40 S03**.

P05 CONTROLLING I/O sss tttttttttt

sss Digital Point Address *User Entered*

This is the address of the point, whose contact state is used to control the interlock specified on Page 03.

Select From:

- F01 - Digital Status**
- F05 - Digital Status**
- F06 - Digital Status**

t..t Descriptor *System Generated*

This is the descriptor entered on Page 01 of the point address specified.

Pnn CONTROLLED O/P n sss tttttttttt
--

Pnn Page Number (06 to 09) *System Generated*

n Output Number (1 to 4) *System Generated*

Up to 4 outputs may be specified.

sss Switched Output Address *ID*

This is the address of the Digital Status point, whose state is being controlled by this interlock.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor *System Generated*

This is the descriptor entered on Page 01 of the point address specified.

P10 MADE DELAY vvvv OPEN DELAY vvvv
--

v..v Delay Time *0 to 9999 Cycles*

Made Delay

This is the delay period in System Cycles which must elapse before the outputs will be switched into the "**MADE**" state.

This delay is invoked when the output has been commanded to switch from the "**OPEN**" to the "**MADE**" state.

FEATURE 45 – PORT CONFIGURATIONS

21.1 PORT CONFIGURATIONS OVERVIEW

This Feature enables the User to configure all the settings which are required to accomplish ISN communications.

The Feature displays the current status and address of each communication port. The User may also configure the Terminal mode time out, the baud rate, and the port's parity. It also allows setting the parameters related to the various YorkTalk versions.

21.2 TYPE OF FEATURE

System

21.3 REFERENCE FEATURES

None

21.4 SECTIONS

F45 PORT CONFIG. S01 CONFIGURATION

21.5 SUMMARY OF PAGES

Page 01	Keyboard Timeout
Page 02	Port Status
Page 03	Port 1 Protocol
Page 04	Port 2 Protocol
Page 05	Node Number
Page 06	Port 1 Baud Rate
Page 07	Port 2 Baud Rate
Page 08	Parity Port 1 and Port 2
Page 09	Floating Point Display

21.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 KEYBOARD TIMEOUT vv MINUTES

vv Timeout Interval 1 to 99

This parameter allows the User to specify the number of minutes the Terminal connection may be left inactive before the controller will return to the advisory level.

A password must be re-entered before access can be regained. The default Keyboard Timeout interval is **5 minutes**.

P02 STATUS: PORT 1 mmmm PORT 2 mmmm

m..m Port Status **FREE/BUSY** *System Generated*

This page displays the status of both communication ports. If a port is actively transmitting or receiving data, "**BUSY**" will be displayed, if not "**FREE**" will be displayed.

P03 PORT 1 PROTOCOL: mmmmmmmm

m . . m Port 1 Communications Selection *Menu FFF*

This field allows the User to specify Port 1 from the following protocol Options:

ISN R7 and R7

Port 1 of the Micro-gateway has been designed to support both Rev 6 and Rev 7 ISN network communications. This means that it's able to initiate COV and COS messages (F28 and F29) as well as receive them. It is also capable of responding to many of the standard ISN messages. It will reply to both background READS and a background WRITES, as well as supporting the OPEN LINK and SAVE & RESTORE commands.

YorkTalk2 V4 and V6

York Talk 2 superseded York Talk 1 and was developed in house to facilitate the easy integration of chillers into an ISN building automation system. The protocol again uses a half-duplex protocol but this time utilises an RS 485-multi drop driver technology to pass data between the chiller and the Micro-gateway.

YorkTalk 3

York Talk 3 the latest protocol to be developed, has been designed to import and export YM panel data in a flexible and configurable fashion. The protocol uses a full duplex serial RS 232 connection to facilitate an efficient processing of chiller panel data. This interface may be user configured to update points according to their application, critical points may be processed fast (within 1 second), while less important data may take several minutes to update.

YorkTalk 1

York Talk 1 is the name that has been assigned to the protocol that is used by one of the older micro-panel designs. This interface is based on a proprietary communication's protocol developed by Andover Controls. It uses a half-duplex RS 232 connection to exchange data between the chiller panel and the Micro-gateway.

P04 PORT 2 PROTOCOL: mmmmmm

m . . m Port 2 Communications Selection

Menu FFF

This field allows the User to specify Port 2 from the following protocol options:

TERMINAL

The Micro-gateway supports the full implementation of TERMINAL mode. Users may logon, and then manipulate the "software" using ISN keyboard emulation. In this context "software" refers to any Feature, Section and Page constructs which may be present in the firmware.

N2

When configured to operate using the ISN (or “N2”) protocol, the Micro-gateway uses a simple process of association to map ISN addresses to N2 objects. This is a fixed hard coded relationship that may not be changed by the user. The N2 objects specifically are ADF, ADI and BD.

YorkTalk2 V4 and V6

York Talk 2 superseded York Talk 1 and was developed in house to facilitate the easy integration of chillers into an ISN building automation system. The protocol again uses a half-duplex protocol but this time utilises an RS 485-multi drop driver technology to pass data between the chiller and the Micro-gateway.

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YorkTalk 1

York Talk 1 is the name that has been assigned to the protocol that is used by one of the older micro-panel designs. This interface is based on a proprietary communication’s protocol developed by Andover Controls. It uses a half-duplex RS 232 connection to exchange data between the chiller panel and the Micro-gateway

Note: When the Node Switch is set for value 127, the Micro-Gateway automatically sets Port 2 for Terminal Mode. This disables any other current operating mode and allows the User to view or alter the configuration parameters.

P05 NODE NUMBER*vv* Node Number*System Generated*

This page shows the controller's NODE address. The User may change this value by adjusting the NODE switch on the controller's hardware. Port 1 and Port 2 are both set to the same number.

Whenever the NODE switch is adjusted, the new value will be automatically displayed on this page. (A delay of several seconds may be experienced).

If either Port has been configured for YorkTalk operation by configuring Page 03 or Page 4, then Page 05 will display that respective port as **0**. The other Port will still display the node number as set by the node switches.

If Port 1 is used for YorkTalk communication, the controller cannot transfer data on a Local ISN Area Network.

P06 PORT 1 BAUD RATE: mmmm*m . . m* Port 1 Baud Rate*Menu R*

This page allows the User to select the operating Baud Rate for communications Port 1.

Port 1 may be configured to 1200, 2400, 4800, 9600 or 50K baud. It will default to 50K for ISN LAN, and 1200 for YorkTalk.

P07 PORT 2 BAUD RATE: mmmm*m . . m* Port 2 Baud Rate*Menu S*

This page allows the User to select the operating Baud Rate for communications Port 2.

Port 2 may be set to 1200, 2400, 4800, 9600, 19K2, or 36K4 baud.

P08 PARITY PORT 1: mmm PARITY PORT 2: mmm*m..m* Parity Selection*Menu M*

This page allows the parity used on Port 2 to be adjusted. The following options may be selected: **“NONE”**, **“ODD”**, **“EVEN”**, **“IGNORE”**.

The selection chosen here must tie up with the requirements of the device connected to this port.

Note: The Parity on Port 1 is automatically adjusted for the device chosen and is presented on this Page as “display only”.

P09 FLOATING POINT DISPLAY: mmmm*m . . m* Floating Point Display*Menu N*

This Page is used to select the resolution of the viewable data when examined using the Terminal Mode. If the selection is set to **“YES”** then the resolution of the numbers will be displayed from 0.0001 to 999999. If the selection is set to **“NO”** the numbers will be displayed in a fixed font.

FEATURE 46 – NETWORK STATUS

22.1 NETWORK STATUS OVERVIEW

The Network Status Feature is used to monitor the state of the ISN LAN by polling each controller on the network in turn. If a unit fails to respond to a poll for more than **five successive** attempts, the unit's failure is noted. There is one Section of this Feature. The end User may select up to 92 controllers that he wishes to monitor.

Since this Feature is available in most ISN controllers, several units may be configured to perform this function. In this way all the units on an ISN may be monitored. However, the more units which are polling, the greater the load that is placed on the network, with a possibility of the communications slowing down.

22.2 TYPE OF FEATURE

User Interface

22.3 REFERENCE FEATURES

50 - Diagnostics

22.4 SECTIONS

F46 NETWORK STATUS S01 SUMMARY

22.5 SUMMARY OF PAGES

Page 01	Number of Failures
Page 02	Polling Interval
Page 03	Failure Output
Page 04	Reserved
Page 05	Time Synchronisation
Page 06-97	Unit Status

Select From:**F01, F05 or F06 - Digital Status**

t..t Descriptor Text *System Generated*

This is the descriptor text entered on Page 01 of the point being specified.

mmm Status *System Generated*

This is the current status of the point specified.

P04 RESERVED

P05 TIME SYNCHRONISATION *mmm*

mmm Time Synchronisation Required *Menu N*

This page provides the User with the option of synchronising all the clocks of the controllers, which have been specified in the table.

Each time a poll occurs, the clocks will be synchronised on the minute barrier.

Pnn vv nn tttttttttt xxxx mmmmmm

Pnn Page Number (06 to 97) *System Generated*

vv Network Number *01 to 99*

nn Node Number to be polled *01 to 99*

A maximum of **92 nodes** may be addressed by this Feature. These may exist on the same network or may be distributed on sub-networks.

t..t Unit Descriptor *System Generated*

This data is automatically entered once the remote unit has been successfully polled. The data which is displayed in this field is the text, which has been entered on Page 01 of Feature 60 of the remote controller.

x..x Unit Number *System Generated*

This data is automatically entered once the remote unit has successfully acknowledged the poll. The data which is displayed in this field is the four digit unit identifier configured on Page 02 of Feature 60 of the remote controller.

m..m Polling Status *System Generated*

A controller may exist in one of two states:

- “**NORMAL**” - Unit Responding.
- “**FAULT**” - Unit failed to respond after 5 attempts.

Pressing the “**ENTER**” key from the User Terminal while viewing these pages causes the node to be polled again.

FEATURE 48 – REPORT CONFIGURATION

23.1 REPORT CONFIGURATION OVERVIEW

The Report Configuration Feature allows the User to design a customised User interface that removes the need for any knowledge about the Feature, Section and Page structure.

It has been designed to allow the "system builder" the ability to define specific access for the User. For example, system data, such as values and status can be chosen and displayed in the Terminal Interface. It can also give the User access to data for editing purposes such as setpoints etc.

The reports which are built under this Feature are accessed by the report password structure as specified in *Feature 49 - User Types*.

There can be **10 pages** per report and each page can contain up to **3 parameters** taken from any page in the system. A total of up to **10 reports** are available, giving access to **300 pieces** of data.

In order to better understand the use of the reports, some examples are given on the next page showing how data may be presented to the User.

Example 1 A report showing the User the current status of his AHUs.

UNIT NAME	UNIT NUMBER	DAY	DATE	TIME
-----------	-------------	-----	------	------

When using the Terminal Interface, the User enters one of the Report Passwords and the Report display below is shown. He may then select individual pages beginning with P01.

AHU TEMP (DEG C)	SUPP	RET	ST.POINT
------------------	------	-----	----------

1ST FLOOR	9.0	20.5	19.0
------------------	------------	-------------	-------------

When the User advances to the next page, the next line of the report will appear.

Note: Using the “list” command in the Terminal Interface will display all of the configured pages within a given report.

AHU TEMP (DEG C)	SUPP	RET	ST.POINT
-------------------------	-------------	------------	-----------------

2ND FLOOR	18.5	21.0	19.0
------------------	-------------	-------------	-------------

Each time the User advances to another Page, the next line of data will be displayed beneath the first line of the report, which is common to all the pages of the report. The report will scroll continually, as the User advances each Page.

Example 2 A General Chiller Report

UNIT NAME	UNIT NUMBER	DAY	DATE	TIME
------------------	--------------------	------------	-------------	-------------

When using the Terminal Interface, the User enters one of the Report Passwords and the entire Report display is shown. He may then select individual pages beginning with P01.

PLANTROOM	WEST	CHILLER STATUS REPORT		
------------------	-------------	------------------------------	--	--

CHW(F)	FLOW 47.0	RET 52.0	STPT	47.5
---------------	------------------	-----------------	-------------	-------------

When the User advances to the next page, the next line of the report will appear.

```
PLANTROOM WEST CHILLER STATUS REPORT
```

```
COND (F) FLOW 90.0 RET 75.0 STPT 74.0
```

Each time the User advances to the next page the next line of data will be displayed beneath the first line of the report which is common to all the pages of the report. The report will scroll continually, as the User advances each page.

Note: Using the “list” command in the Terminal Interface will display the full complement of Report pages.

23.2 TYPE OF FEATURE

User Interface

23.3 REFERENCE FEATURES

All Features

23.4 SECTIONS

```
F48 REPORT CONFIG S01 nn tttttttttt
```

nn Section Number *System Generated*

t.t This is the descriptor entered on Page 01

The Report Configuration Feature has up to **ten** sections, one for each report.

23.5 SUMMARY OF PAGES

Page 1	Report Title
Page 2	No. of Pages in Report
Page 3	Data Field 1 Line 1
Page 4	Data Field 2 Line 1
Page 5	Data Field 3 Line 1
Page 6	Data Field 1 Line 2
Page 7	Date Field 2 Line 2
Page 8	Data Field 3 Line 2
Page 9	Data Field 1 Line 3
Page 10	Data Field 2 Line 3
Page 11	Data Field 3 Line 3
Page 12	Data Field 1 Line 4
Page 13	Data Field 2 Line 4
Page 14	Data Field 3 Line 4
Page 15	Data Field 1 Line 5
Page 16	Data Field 2 Line 5
Page 17	Data Field 3 Line 5
Page 18	Data Field 1 Line 6
Page 19	Data Field 2 Line 6
Page 20	Data Field 3 Line 6
Page 21	Data Field 1 Line 7
Page 22	Data Field 2 Line 7
Page 23	Data Field 3 Line 7
Page 24	Data Field 1 Line 8
Page 25	Data Field 2 Line 8
Page 26	Data Field 3 Line 8
Page 27	Data Field 1 Line 9
Page 28	Data Field 2 Line 9
Page 29	Data Field 3 Line 9
Page 30	Data Field 1 Line 10
Page 31	Data Field 2 Line 10
Page 32	Data Field 3 Line 10

12.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 ttttttttttttt

t..t 15 characters of text *User Entered Text or Menu*

This is used in conjunction with *F49 - User Types* to provide a 40 character header for the User report. This text is always displayed on the top line of the report.

The text displayed on the top line of the User Report = text configured on Page 03 of *Feature 49* or the default text + text configured on Page 01 of *Feature 48*.

P02 vv DISPLAY PAGE(S)

vv Number of pages to be viewed. *User Entered*

This page is used to specify the number of pages the User can scroll through. It is used to avoid blank lines in the report.

Report Generation:

Every report consists of two differing lines of text (a top and a bottom).

The top line will always remain the same throughout the duration of the report. The bottom lines will change according to the page of the report that the User is displaying. In the Terminal Interface single pages or a "list" of pages may be displayed.

To build a report, the User must define the data that is required to be displayed by specifying a Feature, Section, Page, and Field address.

Each page of the report is defined within *F48* from the following component parts:

- i. Fixed Text (Up to twelve characters).
- ii. A range of data fields from one page.
- iii. Fixed Text (Up to six characters).
- iv. A single data field from a page.
- v. Fixed Text (Up to six characters).
- vi. A single data field from a page.

A "Field" is a portion for a Feature's page which may be uniquely specified by the system. For example, the engineering units in *Feature 02, Page 01* would be considered as a field.

Pages which are multiples of **3**, e.g. (3, 6, 9, ...30) allow the User to define a **range** of Fields, from which data may be retrieved, while all the other pages ..eg (4, 5, 7, ...32) will only allow data from **one** Field to be retrieved.

On pages that allow multiple field references, if only one parameter is required to be displayed, then the two fields referenced must be set equal.

Each page in the software is split into fields, where each parameter or text string as shown in this manual is considered to be a data field. The way, in which the fields are defined, is shown below:

P01 tttttttttt vvvvvv mmm

P01 O/S AIR 18.5 C
--

- O/S AIR = **Data Field 1** (Editable)
- 18.5 = **Data Field 2** (Non Editable)
- C = **Data Field 3** (Editable Menu)

Report Interface Restrictions

- i. No visit functions can be activated through the report interface.
- ii. On the terminal interface, “tim”, “trm”, and “txt” are disabled on the report interface.

Pnn tttttttttt Fnn Snn Pnn Dvv Dvv mmm

Pnn Page No.s (3,6,9,12,15,18,21,24,27,30) *System Generated*

t..t Parameter Description (12 characters) *User Entered
Text or Menu*

This field is used to name the **first** parameter to be displayed in the report.

It should be noted that the User has **40 characters** to build his line of data, and in order to maximise the use of this space, the program automatically compresses spaces on this display line.

Note: Any spaces should be expressed by using ! and not the space bar.

Fnn Feature Number *Any Feature*

This is the address of the Feature, from which the User wishes to extract data to be displayed as the **first** parameter.

Snn Section Number *Any Section*

This is the address of the Section, which is associated with the Feature specified above.

Pnn Page Number *Any Page*

This is the address of the Page, which is associated with the Feature and Section previously specified.

Dvv 1st Data Field *Any Data*

This field is used to specify the first data parameter, which is to be displayed in the report.

Dvv nth Data Field *Any Data*

This field is used to specify the last data parameter to be displayed in the report.

The **1st** and the **nth** data fields allow the User to define a range of fields, from which data will be used in the report.

For example, if the first data field is set as 2 and the nth data field is set as 4, then the contents of data field 2, 3 and 4 will be displayed in the report.

Three separate entries will be displayed in the report.

mmm Data Editable *Menu GG*

This denotes whether the data defined can be edited when the report is viewed. Two states are possible:

- “**FIX**” Cannot be edited by the User.
- “**EDI**” Can be edited by the User.

The system builder can review the appearance of the report at any point in time by typing a lower case "m" on a terminal.

A subsequent pressing of this key will return the User to the report configuration.

Pnn ttttt Fnn Snn Pnn Dnn mmm

Pnn Page No.s 4,7,10,13,16,19,22,25,28,31 *System Generated*

t..t Parameter Description (12 characters) *User Entered Text or Menu*

This field is used to name the **second** parameter to be displayed in the report.

It should be noted that the User has **40 characters** to build his line of data, and in order to maximise the use of this space, the program automatically compresses spaces on this display line.

Any spaces should be expressed by using **!** and not the space bar.

Fnn Feature Number *Any Feature*

This is the address of the Feature, from which the User wishes to extract data to be displayed as the **second** parameter.

Snn Section Number *Any Section*

This is the address of the Section, which is associated with the Feature specified above.

Pnn Page Number *Any Page*

This is the address of the Page, which is associated with the Feature and Section previously specified.

Dvv Data Field *Any Data*

This field is used to specify the second data parameter to be displayed in the report.

mmm Data Editable *Menu GG*

This denotes whether the data defined can be edited when the report is viewed. Two states are possible:

“**FIX**” Cannot be edited by the User.

“**EDI**” Can be edited by the User.

Ppp tttttttttt Fnn Snn Pnn Dnn mmm

Pnn Pages No 5,8,11,14,17,20,23,26,29,32 *System Generated*

t..t Parameter Description (12 characters) *User Entered Text
or Menu*

This field is used to name the **third** parameter to be displayed in the report.

It should be noted that the User has **40 characters** to build his line of data, and in order to maximise the use of this space, the program automatically compresses spaces on this display line.

Note: Use “!” and not the space bar, to explicitly express spaces and avoid compression.

Fnn Feature Number *Any Feature*

This is the address of the Feature, from which the User wishes to extract data to be displayed as the **third** parameter.

Snn Section Number *Any Section*

This is the address of the Section, which is associated with the Feature specified above.

Pnn Page Number *Any Page*

This is the address of the Page, which is associated with the Feature and Section previously specified.

Dvv Data Field *Any Data*

This field is used to specify the third data parameter to be displayed in the report.

mmm Data Editable

Menu GG

This denotes whether the data defined can be edited when the report is viewed. Two states are possible:

“**FIX**” Cannot be edited by the User.

“**EDI**” Can be edited by the User.

Each line of the report may require up to 3 pages to define it. If only one parameter is required to be displayed per report line, the balance of the pages in the line definition should be left unconfigured.

Each report line begins on the Page numbers shown below:

Report line 1 - begins on Page 04

Report line 2 - begins on Page 07

Report line 3- begins on Page 10

Report line 4 - begins on Page 13

Report line 5 - begins on Page 16

Report line 6 - begins on Page 19

Report line 7 - begins on Page 22

Report line 8 - begins on Page 25

Report line 9 - begins on Page 28

Report line 10 - begins on Page 31

FEATURE 49 - USER TYPES

24.1 USER TYPES OVERVIEW

This Feature in conjunction with *Feature 48* allows the "system builder" to design a customised User interface that removes the need for any knowledge about the Feature, Section, and Page structure.

Specifically, *Feature 49* allows for the configuration of individual User interfaces. The User is able to specify the source of the data, which will be made available on entry of a suitable low level password. Each section defines a User type with an associated password.

The range of Features, from which these reports can be constructed, is shown in the referencing Features list.

24.2 TYPE OF FEATURE

User Interface

24.3 REFERENCE FEATURES

The following Features can be referenced for information and editing purposes as shown in the page details.

F10 - System Calendar
F33 - Time Schedules
F48 - Report Configuration
F52 - York Talk 1
F53 - York Talk 3
F54 - York Talk 2

24.4 SECTIONS

F49 USER TYPE Snn tttttttttt

<i>nn</i>	Section Number	<i>System Generated</i>
<i>t..t</i>	User Name	<i>System Generated</i>

P02 USER REPORTS vv TO vv PAGE REF. mmm
--

<i>v..v</i> Range	<i>00 to 10 EDC & LDC</i> <i>00 to 04 FDC & TDC</i>
-------------------	--

This is the range of sections available from *F48 - User Reports* under the operation of this password. The section titles will be displayed in the User menu for selection.

<i>mmm</i> Page References	<i>Menu N</i>
----------------------------	---------------

This is used to prefix the data with page references if required. It should be noted that the page numbers associated with this report will be different from those of the Feature.

P03 USER REPORT TEXT tttttttttttttt
--

<i>t..t</i> Report Title	<i>User Entered Text or Menu</i>
--------------------------	----------------------------------

This **sixteen** character field allows the title of the report to be modified. If not configured, the following default text will be used - **"REPORT CONFIG"**.

P04 RESERVED

P05 RESERVED

P06 RESERVED

P07 RESERVED

P08 RESERVED

P09 RESERVED

P10 RESERVED

P11 RESERVED

P12 RESERVED

P13 RESERVED

P14 CALENDAR mmm mmm PAGE REF. mmm

mmm Calendar

Menu N

This is used to allow the User accessibility rights of *F10 - System Calendar*, under the operation of this password.

mmm Edit Facility

Menu GG

This is used to select whether editing of data from within this report is to be allowed.

“**EDT**” Allows data such as holidays, dates etc. to be modified.

“**FIX**” Allows data to be viewed only.

mmm Page References

Menu N

This is used to prefix the data with page references if required. It should be noted that the page numbers associated with this report will be different from those of the Feature.

P15 CALENDAR TEXT tttttttttttttt

t..t Report Title *User Entered Text or Menu*

This **sixteen** character field allows the title of the report to be modified. If not configured, the following default text will be used - **“SYSTEM CALENDAR”**.

P16 SCHEDULES vv TO vv mmm PAGE REF. mmm

v..v Range *00 up to 16*

This is the range of sections available from *F33 - Time Schedules* under the operation of this password. The section titles will be displayed in the User menu for selection.

mmm Edit Facility *Menu GG*

This is used to select whether editing of data from within this report is to be allowed.

“EDT” Allows data such time changes, etc. to be modified.

“FIX” Allows data to be viewed only.

mmm Page References *Menu N*

This is used to prefix the data with page references if required. It should be noted that the page numbers associated with this report will be different from those of the Feature.

P17 SCHEDULE TEXT tttttttttttttt

t..t Report Title *User Entered Text or Menu*

This **sixteen** character field allows the title of the report to be modified. If not configured, the following default text will be used - **“TIME SCHEDULE”**.

P18 YORK TALK 1 v TO v PAGE REF. mmm

v..v Range

00 up to 08

This is the range of sections available from *F52 - York Talk 1* under the operation of this password. The section titles will be displayed in the User menu for selection.

mmm Page References

Menu N

This is used to prefix the data with page references if required. It should be noted the page numbers associated with this report will be different from that of the Feature.

P19 YORK TALK 1 TEXT tttttttttttttt

t..t Report Title

User Entered Text or Menu

This **sixteen** character field allows the title of the report to be modified. If not configured, the following default text will be used - **“YORK TALK 1 CONFIG”**.

P20 YORK TALK 3 mmm PAGE REF. mmm

v..v Range

This is the range of sections available from *F53 - York Talk 3* under the operation of this password. The section titles will be displayed in the User menu for selection.

mmm Page References

Menu N

This is used to prefix the data with page references if required. It should be noted the page numbers associated with this report will be different from that of the Feature.

P21 YORK TALK 3 TEXT tttttttttttttt

t..t Report Title *User Entered Text or Menu*

This **sixteen** character field allows the title of the report to be modified. If not configured, the following default text will be used - **“YORK TALK 3 CONFIG”**.

P22 YORK TALK 2 mmm PAGE REF. mmm

v..v Range

This is the range of sections available from *F54 - York Talk 2* under the operation of this password. The section titles will be displayed in the User menu for selection.

mmm Page References *Menu N*

This is used to prefix the data with page references if required. It should be noted the page numbers associated with this report will be different from that of the Feature.

P23 YORK TALK 2 tttttttttttttt

t..t Report Title *User Entered Text or Menu*

This **sixteen** character field allows the title of the report to be modified. If not configured, the following default text will be used - **“YORK TALK 2 CONFIG”**.

FEATURE 50 - SYSTEM DIAGNOSTICS

25.1 FEATURE 50 - SYSTEM DIAGNOSTICS

This Feature provides the User with information relating to the operation and integrity of the controller.

25.2 TYPE OF FEATURES

System

25.3 REFERENCE FEATURES

None

25.4 SECTION

F50 SYSTEM DIAG. S01 DIAGNOSTICS

All the diagnostic routines are contained in one Section.

25.5 SUMMARY OF PAGES

Page 01	Software Product Identifier
Page 02	Software Release Type
Page 03	BRAM Revision Number
Page 04	Template Identifier
Page 05	Version Number
Page 06	Software Release Date
Page 07	Hardware Identifier
Page 08	Current System Load
Page 09	Peak System Load and Reset
Page 10	Optimal Control Debug
Page 11	Maximum Demand Debug
Page 12	BRAM Checkword
Page 13	Reconfigure Memory
Page 14	Reset System
Page 15	Last Power Failure
Page 16	Last Power Up
Page 17	Current Date and Time Including Seconds
Page 18	Network Load
Page 19	LAN Test
Page 20	LAN Speed
Page 21	LAN Retries

Page 22	Memory Utilization
Page 23	UART Errors
Page 24	Error Count
Page 25	N2 Response Time
Page 26	N2 Response Time
Page 27	N2 Response Time
Page 28	N2 Reset

25.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 SOFTWARE PRODUCT : ISN nnn rrvv

nnn Product Name *System Generated*

This field defines the name of this Product, e.g. "DDC".

rr Release Number *System Generated*

This field defines the name of the current release. In the case of Rev.8 software, this field displays "88".

vv Version Number *System Generated*

This field defines the version number of any special application's software which may be being used.

P02 RELEASE TYPE : mmmm

m..m Type *System Generated*

This page displays the software release type. It can be one of three options:

"PRE" Software may be incomplete (in that development is still taking place) and/or is currently going through system test. **This Release is only normally produced for use by Test Engineers. This type of release should never get to any customer site.**

“BETA” Field trials are currently being carried out on live sites.

“FULL” Software now available for release, as both System Test and Field Trials have been completed.

P03 BRAM REVISION : vv

vv Revision Number *System Generated*

This is the revision number, which forms part of the release template name on Page 04.

P04 TEMPLATE NAME : n rr _ tt

n First Initial of the Product Name *System Generated*

rr Revision Number *System Generated*

tt Template Number *System Generated*

This page is used to identify templates for YES that must be used with the software. It incorporates the name and release number of the Product along with the number of the templates, currently existing under that particular Product.

The number of currently existing templates serves as the identifier of the template, that needs to be used with the present release of software. This number is incremented every time the BRAM, the NCWBRAM, the VRAM, or the User Display presentation of the Product changes.

P05 VERSION : vv

vv Software Revision *System Generated*

This is the revision number and relates to application changes which do not affect the BRAM or NCWBRAM organisation.

P06 RELEASE DATE: dd-mmm-yyyy

dd Day of Month *System Generated*

mmm Month *System Generated*

yyyy Year *System Generated*

This is the date when the software defined on Page 01 was released.

P07 HARDWARE REVISION : hhhh

h..h Revision Number *System Generated*

This page relates to the type of hardware that the software will run on, the list being:

BGnnn.

Where “n” is either blank or an integer.

P08 CURRENT SYSTEM LOAD: vvvv

v..v System Load *System Generated*

This page shows the amount of time expressed as a percentage, that the V25 micro-controller is spending to process data within a given system cycle.

Note: If the system load exceeds **90%**, the controller will start to slow down, with the execution time of each task being extended. The functions listed below will be effected in the following order of priority.

- a. Remote Data will not be sent (F28, F29).
- b. Terminal list command through Channel 2 will stop.
- c. Terminal list command through Channel 1 will stop.
- d. The rest of the Applications will be Suspended.
- e. Yorktalk will be Suspended.

The recommended value for the Load Factor should be no greater than **75%**. If the Load Factor is greater than this, the User should consider extending the cycle time.

P09 PEAK SYSTEM LOAD: vvvvv%

v..v Peak Load

System Generated

This page shows the maximum peak load experienced by the system. Using the Terminal Interface, this value may be reset by pressing the **ENTER** key while viewing this page.

Peak system loads greater than **90%** may cause tasks to be suspended intermittently i.e. for the duration of the peak load.

P10 RESERVED

P11 RESERVED

P12 BRAM CHECKWORD vvvv

v..v BRAM Checkword

System Generated

This page displays the checksum of all the **configured** data in the system.

P16 LAST POWER-UP ddm mm hhmm

<i>dd</i>	Day of the Month	<i>System Generated</i>
<i>mmm</i>	Month	<i>System Generated</i>
<i>hh</i>	Hours	<i>System Generated</i>
<i>mm</i>	Minutes	<i>System Generated</i>

This Page displays the most recent date and time, which relates to the power being restored to this unit.

P17 DATE: ddm mm TIME: hhmm SECONDS: vv
--

Current Time and Date

<i>dd</i>	Day of the Week	<i>System Generated</i>
<i>mm</i>	Month	<i>System Generated</i>
<i>hh</i>	Hours	<i>System Generated</i>
<i>mm</i>	Minutes	<i>System Generated</i>
<i>vv</i>	Seconds	<i>System Generated</i>

This page displays the current date and time.

Note: The information being displayed here is generated from the data initially configured into Feature 10 and processed by the real time clock.

P18 NETWORK LOAD: vvvv%

<i>vvvv %</i>	<i>System Generated</i>
---------------	-------------------------

This page displays the average number of characters, which are being transported by the network expressed as a percentage of maximum network load. The through-put measurement is performed over a **30 second** period.

Note: A **100 %** saturated network is not capable of accepting any more characters. The symptoms will manifest slow communications.

P19 LAN TEST C: vvvvv S: vvvvv F: vvvvv
--

vvvvv (C and F Fields) Number

System Generated

vvvvv (The S Field) Number

User Entered

The LAN test has been designed to transmit a User defined number of messages to a number of specified destinations, and then to register performance.

Feature 46 (Network Status) is used as the trigger mechanism for this test. **All** the nodes, which have been configured, in this feature will be sequentially "polled" and the responses from their destinations will be tracked and displayed on this page.

C: This field displays the number of messages that have currently been transmitted.

S: This field is User Configurable and specifies the number of messages which are to be included in the test.

F: This field displays the number of messages that have failed to obtain a positive high level acknowledgement within the designated 4 second window.

P20 LAN SPEED: vvvvv AV: vvvvv PK: vvvvv

vvvvv Time in milli-seconds

System

Generated

This page displays the time in milli-seconds that it takes a message to reach it's destination and for the destination to send back a high level acknowledgement.

The **AV** field displays the average time, while the **PK** field displays the peak time. The **PK** field shows the longest time that it will take the message to do the round trip.

Note 1: In order to obtain a true system average, 10,000 messages should be specified in the **S** field on Page 19.

Note 2: Application software running in the destination controller will effect the "time of flight". To obtain an **absolute** comms timing, the destination should not be running any applications at the time.

P21 LANR 1: vvvvv 2: vvvvv 3: vvvvv F: vvvvv

<i>field</i>	<i>a</i>	<i>b</i>	<i>c</i>	<i>d</i>
vvvvv	Number			System Generated

These four fields provide the User with a statistical means of viewing the operation of the communications.

This test uses "low level" retries as a means of determining network integrity.

Field a: This displays the total number of times the originating unit required **one** retry to transfer a message successfully to it's destination.

Field b: This displays the total number of times the originating unit required **two** retries to transfer a message successfully to it's destination.

Field c: This displays the total number of times the originating unit required **three** retries to transfer a message successfully to it's destination.

Field d: This displays the total number of times the originating unit required more than **three** retries to transfer a message successfully to it's destination.

P22 MEMORY UTILISATION: vvvv %

vvvv Memory Utilization

System Generated

This page displays a value, which represents the percentage of the available configurable fields that are currently being used.

This function is only ever executed on a system power-up or a system reset. Therefore, if the configuration is changed on the "fly", it will not be reflected on this page until a system reset or power-up has occurred.

P23 UAK1 ERR = vvvvv RSEND = vvvvv /0
--

vvvvv (**ERR** Field) Number

System Generated

vvvvv (**RSEND** Field) Number

System Generated

This counter will increment if the UART is for whatever reason not able to process the incoming characters in the allocated time (i.e. overrun, framing, parity or other errors), or it receives a "trash" character. Likewise, the Micro-Gateway monitors the integrity of the characters it sends out and any anomalies will be met by re-sending the characters. Each time a character is re-sent, this counter is incremented.

P24: A = vvvvv B = vv C = vv D = vv E = vv

vvvv (Fields A, B, C, D, E)

System Generated

These fields count the internal workings of the communications process. They increment continually as N2 data is received and transmitted by the Micro-Gateway. They are not intended for general field use but are useful when it is necessary to involve factory personnel in diagnostic and troubleshooting procedures.

NOTE: The purpose of this and the following Pages is to collect data regarding the reliability of the N2 network. Its primary purpose is to provide technical data regarding the inner-workings of the controller's components. It is intended to assist factory personnel in being able to diagnose units suspected of faulty N2 communications. As such, it has limited value to general field personnel.

P25: N2 TIME <5 MS: vvvvv >200: vv

vvvvv (5 MS Field) Number

System Generated

vvvvv (200 MS Field) Number

System Generated

This field counts the response time of the Micro-Gateway in relation to sending and receiving N2 data. Specifically, the counter is incremented for any response time less than **5** milliseconds or greater than **200** milliseconds.

P26 N2 TIME <10MS: vv >50MS: vv
--

vvvvv (10 MS Field) Number

System Generated

vvvvv (50 MS Field) Number

System Generated

This field counts the response time of the Micro-Gateway in relation to sending and receiving N2 data. Specifically, the counter is incremented for any response time less than **10** milliseconds or greater than **50** milliseconds.

P27 N2 TIME <150MS: vv >200MS: vv
--

vvvvv (150 MS Field) Number

System Generated

vvvvv (200 MS Field) Number

System Generated

This field counts the response time of the Micro-Gateway in relation to sending and receiving N2 data. Specifically, the counter is incremented for any response time less than **150** milliseconds or greater than **200** milliseconds.

P28 PRESS ENTER TO RESET N2 ERROR TABLE

Using the Terminal Mode, it is possible for the User to reset the N2 diagnostic count (P23 to P27). This is done by pressing the **ENTER** key while viewing this page.

FEATURE 53 – YORKTALK 3

27.1 YORKTALK 3 OVERVIEW

The YORKTALK Feature allows the MicroGateway to interface with York Chillers which used the “YM” protocol. This Feature provides a means of sending control commands to the chiller and retrieving dynamic data back.

Four analog values and **four digital values** may be sent to each chiller. In response to this "poll", **39 analog values**, **25 digital status**, and **10 codes** may be retrieved per section. Four Sections are available.

The meaning of these parameters differ between chiller models and are determined by the software in the chiller control panel.

27.2 TYPE OF FEATURE

Control

27.3 REFERENCE FEATURES

F01 - Digital Status
F02 - Analog Value
F03 - System Variables
F04 - Analog Value
F05 - Digital Status
F06 - Digital Status
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

27.4 SECTIONS

F53 YORK TALK 3	S01 tttttttttt
------------------------	-----------------------

S01 Section Numbers

System Generated

All the F53 YorkTalk routines are combined in one Section.

27.5 SUMMARY OF PAGES

Page 01 **Device ID Number and Poll Time**
Page 02 **Failure Output Point**
Page 03-06 **Analog Point Address**
Page 07-10 **Digital Point Address**
Page 11-35 **Analog Point Address**
Page 36-55 **Digital Point Address**
Page 56-65 **Code Point Address**
Page 66-79 **Analog Point Address**
Page 80-84 **Digital Point Address**
Page 85 **Set YM Date/Time**
Page 86 **Get YM Date/Time**
Page 87-89 **Reserved**
Page 90 **First Poll Count**
Page 91 **Message Failure Count**
Page 92 **Poll Response Time**
Page 93 **Retry Count**
Page 94 **YT3 Reset**
Page 45 **Watchdog, Wait**

27.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

```

P01 MODE mmmmmmmm TIME OUT vvvv MSEC mm
    
```

m..m Mode Enabled/Disabled *Menu T*
 vv Time Out *00 to 9999*
m..m Unit Selection *Menu NNN*

```

P02 FAIL O/P sss     RETRIES= vv     COMMS mmm
    
```

sss Failure Output *User Entered*

This is the address of a digital point, which will be switched to the "MADE" state if the polling controller does not receive a reply within the designated timeout, and if the number of retries has expired.

Select From:**F01 - Digital Status****F05 - Digital Status****F06 - Digital Status***v..v Retries**User Entered Value*

This is the number of times the controller will poll a chiller which is not responding or is responding incorrectly. When this value is exceeded, the Failure Output switches from “OK” to “BAD”.

*mmm Chiller Status**System**Generated*

This is the current status of the Chiller communications. If communications is responding correctly and the retries value has not been exceeded, the value is “OK”. A fault is indicated as “BAD”.

The priority influence on the point specified will be "OR".

Ppp ANALOG n sss: tttttttttt vvvv
--

Ppp Page Number (03 to 06)*System Generated**n* Analog Send Number (1 to 4)*System Generated**sss* Analog Point Address*User Entered*

This is the address of an analog point, whose value is to be sent to the chiller.

Select From:**F02 - Analog Value****F03 - System Variable****F04 - Analog Value****F07 - Analog Value****F08 - Conditional Logic****F09 - Analog Value**

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point going to the Chiller.

v..v Value *System Generated*

This is the current value of the point specified.

Ppp DIGITAL n sss: tttttttttt mmmm

Ppp Page Number (07 to 10) *System Generated*

n Digital Send Number (01 to 04) *System Generated*

sss Digital Point Address *User Entered*

This is the address of a digital point, whose status is to be sent to the chiller.

Select From:

- F01 - Digital Status**
- F05 - Digital Status**
- F06 - Digital Status**

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point going to the Chiller.

m..m Status *System Generated*

This is the current status of the point specified.

OPEN - Digital data sent to the chiller is “0”

MADE - Digital data setn to the chiller is “1”

Ppp ANALOG nn sss: tttttttttt vvvvv
--

Ppp Page Number (11 to 35) *System Generated*

n Retrieved Analog Data Number (01 to 25) *System
Generated*

sss Analog Point Address *User Entered*

This is the address of an analog point, which will be used to retrieve analog data from the chiller.

Select From:

F02 - Analog Value

F04 - Analog Value

F07 - Analog Value

F09 - Analog Value

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

v..v Value *System Generated*

This is the current value retrieved from the chiller.

Ppp DIGITAL nn sss: tttttttttt mmmm
--

Ppp Page Number (36 to 55) *System Generated*

n Retrieved Digital Data Number (01 to 20) *System
Generated*

sss Digital Point Address *User Entered*

This is the address of a digital point, which will be used to retrieve status data from the chiller.

Select From:

F01 - Digital Status
F05 - Digital Status
F06 - Digital Status

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

m..m Status *System Generated*

This is the current status as retrieved from the chiller. Two states are available:

OPEN - Digital data retrieved from the chiller is "0"

MADE - Digital data retrieved from the chiller is "1"

Ppp OP. CODE nn sss: tttttttttt vvv
--

Ppp Page Number (56 to 65) *System Generated*

n Retrieved Code Number (01 to 10) *System Generated*

sss Code Point Address *User Entered*

This is the address of an analog point, which will be used to retrieve analog data from the chiller.

Select From:

F02 - Analog Value
F04 - Analog Value
F07 - Analog Value
F09 - Analog Value

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

v..v Current Code *System Generated*

This is the current code as retrieved from the chiller. Refer to Chiller manual for details.

Ppp ANALOG nn sss: tttttttttt vvvvv

Ppp Page Number (66 to 79) *System Generated*

nn Retrieved Analog Data Number (26 to 39) *System
Generated*

sss Analog Point Address *User Entered*

This is the address of an analog point, which will be used to retrieve analog data from the chiller.

Select From:

- F02 - Analog Value**
- F03 - System Variable**
- F04 - Analog Value**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

v..v Value *System Generated*

This is the current value as retrieved from the chiller.

Ppp DIGITAL nn sss: tttttttttt mmmm
--

Ppp Page Number (80 to 84) *System Generated*

nn Retrieved Digital Data Number (21 to 25)
System Generated

sss Digital Point Address *User Entered*

This is the address of a digital point, which will be used to retrieve status data from the chiller.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

.

m..m Current Status *System Generated*

This is the current status as retrieved from the chiller. Two states are available:

OPEN - Digital data retrieved from the chiller is "0"

MADE - Digital data retrieved from the chiller is "1"

P85 SET YM TIME AND DATE mm*Mm* User Selectable*Menu 000*

Select the interval that the MicroGateway will synchronise the YM panel clock.

P86 GET YM TIME AND DATE mm*Mm* User Selectable*Menu 000*

Select the interval that the YM panel will synchronise the MicroGateway.

Ppp RESERVED*Ppp* Page Number (85-89)*System Generated*

These Pages are Reserved

P90 OVERRUN ERRORS vvvvv*v...v* Overrun Errors*System Generated*

This is the number of times the chiller panel responds faster than the MicroGateway can receive characters.

P91 MESSAGE FAILURE COUNT vvvvv*v...v* Message Failure Count*System Generated*

This is the number of polls that have failed to read their destination after the retries for each poll have been exhausted.

P92 POLL RESPONSE TIME vvvvv

v...v Poll Response Time *System Generated*

This is the maximum time taken (second) for a controller to poll or entry a chiller in order to obtain a successful response back. This value does not update if the poll was successful.

P93 RETRY COUNT vvvvv

v...v Retry Count *System Generated*

This is the total number of retry polls made by the controller in an attempt to achieve a successful poll.

P94 PRESS ENTER TO RESET YT3 TABLE

v...v Message Failure Count *System Generated*

Using the Terminal Mode, it is possible for the User to reset the YT3 Table. This is done by entering the "e" value from the Terminal while viewing this page.

P95 WATCHDOG vvvv WAIT vvvv

v..v *System Generated*

v..v *System Generated*

These values refer to intermittent communication failures. Specifically they reference reboot count and times referencing a communications lock-up condition.

FEATURE 54 – YORKTALK 2

28.1 YORKTALK 2 OVERVIEW

The YORKTALK Feature allows the MicroGateway to interface with York Chillers which used the legacy protocol. This Feature provides a means of sending control commands to the chiller and retrieving dynamic data back.

Four analog values and **four digital values** may be sent to each chiller. In response to this "poll", **39 analog values**, **25 digital status**, and **10 codes** may be retrieved, per section. Four Sections are available.

The meaning of these parameters differ between chiller models and are determined by the software in the chiller control panel.

28.2 TYPE OF FEATURE

Control

28.3 REFERENCE FEATURES

F01 - Digital Status
F02 - Analog Value
F03 - System Variables
F04 - Analog Value
F05 - Digital Status
F06 - Digital Status
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

28.4 SECTIONS

F54 YORK TALK 2	S01 tttttttttt
------------------------	-----------------------

S01 Section Numbers

System Generated

All the *F54* YorkTalk routines are combined in one Section.

28.5 SUMMARY OF PAGES

Page 01	Device ID Number and Poll Time
Page 02	Failure Output Point
Page 03-06	Analog Point Address
Page 07-10	Digital Point Address
Page 11-35	Analog Point Address
Page 36-55	Digital Point Address
Page 56-65	Code Point Address
Page 66-79	Analog Point Address
Page 80-84	Digital Point Address
Page 85-89	Reserved
Page 90	First Poll Count
Page 91	Message Failure Count
Page 92	Poll Response Time
Page 93	Retry Count
Page 94	YT2 Reset

28.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 CHILLER ID vv POLL TIME vv

vv Node Number *00 to 99*

This is the node address of the chiller to be polled. The User must refer to the chiller's User manual to obtain this information. The **Node Number = 1 + Chiller Number** (on its rotary switch).

If a node number of zero is configured, no polling will occur.

vv Poll Interval 00 to 99

This is the allocated time allowed for the Micro-Gateway to poll and then receive a response back from the Chiller panel. The polling reports at a regular interval based on this rate set by the User. Its value is in seconds.

If a node number of zero is configured, no polling will occur.

P02 FAIL O/P sss RETRIES vv CHILLER mmm

sss Failure Output

User Entered

This is the address of a digital point, which will be switched to the "**MADE**" state if the polling controller does not receive a reply within the designated timeout, and if the number of retries has expired.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

v..v Retries

User Entered Value

This is the number of times the controller will poll a chiller which is not responding or is responding incorrectly. When this value is exceeded, the Failure Output switches from "**OK**" to "**BAD**".

mmm Chiller Status

System

Generated

This is the current status of the Chiller communications. If communications is responding correctly and the retries value has not been exceeded, the value is "**OK**". A fault is indicated as "**BAD**".

The priority influence on the point specified will be "**OR**".

Ppp ANALOG n sss: tttttttttt vvvvv

Ppp Page Number (03 to 06)

System Generated

n Analog Send Number (1 to 4)

System Generated

sss Analog Point Address

User Entered

This is the address of an analog point, whose value is to be sent to the chiller.

Select From:

- F02 - Analog Value**
- F03 - System Variable**
- F04 - Analog Value**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point going to the Chiller.

v..v Value *System Generated*

This is the current value of the point specified.

PPP DIGITAL n sss: tttttttttt mmmm

Ppp Page Number (07 to 10) *System Generated*

n Digital Send Number (01 to 04) *System Generated*

sss Digital Point Address *User Entered*

This is the address of a digital point, whose status is to be sent to the chiller.

Select From:

- F01 - Digital Status**
- F05 - Digital Status**
- F06 - Digital Status**

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point going to the Chiller.

m..m Status *System Generated*

This is the current status of the point specified.

OPEN - Digital data sent to the chiller is “0”

MADE - Digital data setn to the chiller is “1”

PPP ANALOG nn sss: tttttttttt vvvvv

Ppp Page Number (11 to 35) *System Generated*

n Retrieved Analog Data Number (01 to 25) *System
Generated*

sss Analog Point Address *User Entered*

This is the address of an analog point, which will be used to retrieve analog data from the chiller.

Select From:

F02 - Analog Value

F04 - Analog Value

F07 - Analog Value

F09 - Analog Value

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

v..v Value *System Generated*

This is the current value retrieved from the chiller.

Ppp DIGITAL nn sss: tttttttttt mmmm
--

<i>Ppp</i>	Page Number (36 to 55)	<i>System Generated</i>
<i>n</i>	Retrieved Digital Data Number (01 to 20)	<i>System Generated</i>
<i>sss</i>	Digital Point Address	<i>User Entered</i>

This is the address of a digital point, which will be used to retrieve status data from the chiller.

Select From:

F01 - Digital Status
F05 - Digital Status
F06 - Digital Status

<i>t..t</i>	Descriptor	<i>System Generated</i>
-------------	------------	-------------------------

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

<i>m..m</i>	Status	<i>System Generated</i>
-------------	--------	-------------------------

This is the current status as retrieved from the chiller. Two states are available:

OPEN - Digital data retrieved from the chiller is "0"

MADE - Digital data retrieved from the chiller is "1"

Ppp OP. CODE nn sss: tttttttttt vvv
--

<i>Ppp</i>	Page Number (56 to 65)	<i>System Generated</i>
<i>n</i>	Retrieved Code Number (01 to 10)	<i>System Generated</i>
<i>sss</i>	Code Point Address	<i>User Entered</i>

This is the address of an analog point, which will be used to retrieve analog data from the chiller.

Select From:

F02 - Analog Value
F04 - Analog Value
F07 - Analog Value
F09 - Analog Value

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

v..v Current Code *System Generated*

This is the current code as retrieved from the chiller. Refer to Chiller manual for details.

Ppp ANALOG nn sss: tttttttttt vvvvv

Ppp Page Number (66 to 79) *System Generated*

nn Retrieved Analog Data Number (26 to 39) *System
Generated*

sss Analog Point Address *User Entered*

This is the address of an analog point, which will be used to retrieve analog data from the chiller.

Select From:

F02 - Analog Value
F03 - System Variable
F04 - Analog Value
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

v..v Value *System Generated*

This is the current value as retrieved from the chiller.

Ppp DIGITAL nn sss: tttttttttt mmmm

Ppp Page Number (80 to 84) *System Generated*

nn Retrieved Digital Data Number (21 to 25)
System Generated

sss Digital Point Address *User Entered*

This is the address of a digital point, which will be used to retrieve status data from the chiller.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor *System Generated*

This is the generic descriptor text, that is associated with each specific data point coming from the Chiller.

m..m Current Status *System Generated*

This is the current status as retrieved from the chiller. Two states are available:

OPEN - Digital data retrieved from the chiller is "0"

MADE - Digital data retrieved from the chiller is "1"

Ppp RESERVED

Ppp Page Number (85-89)

System Generated

These Pages are Reserved

P90 FIRST POLL COUNT vvvvv

v...v First Poll Count

System Generated

This is the accumulated number of polls that have been sent by the controller to the panel. It does not include retry counts.

P91 MESSAGE FAILURE COUNT vvvvv

v...v Message Failure Count

System Generated

This is the number of polls that have failed to read their destination after the retries for each poll have been exhausted.

P92 POLL RESPONSE TIME vvvvv

v...v Poll Response Time

System Generated

This is the maximum time taken (second) for a controller to poll or entry a chiller in order to obtain a successful response back. This value does not update if the poll was successful.

P93 RETRY COUNT vvvvv

v...v Retry Count

System Generated

This is the total number of retry polls made by the controller in an attempt to achieve a successful poll.

P94 PRESS ENTER TO RESET YT2 TABLE

v...v Message Failure Count

System Generated

Using the Terminal Mode, it is possible for the User to reset the YT2 Table. This is done by entering the "e" value from the Terminal while viewing this page.

FEATURE 55 - MULTIPLEXING

29.1 MULTIPLEXING OVERVIEW

The Multiplexing Feature is used to convert the status of **eight** digital points into **one** analog value. The Feature's primary function is to minimise the amount of data being transferred on the network. Instead of sending **eight** digital transfers, only **one** analog transfer is required.

The eight points are each "**weighted**", with Point 1 being the least significant and assigned a value of **1**, while point 8 being the most significant and assigned a value of **128**. Each of the digital points, which are in the "**MADE**" state, are counted towards the final total.

29.2 TYPE OF FEATURE

Control

29.3 REFERENCE FEATURES

F01 - Digital Status
F02 - Analog Value
F04 - Analog Value
F05 - Digital Status
F06 - Digital Status
F07 - Analog Value
F09 - Analog Value

29.4 SECTIONS

F55 MULTIPLEXING Snn tttttttttt
--

nn Section Number *System Generated*

t..t Section Descriptor *System Generated*

This is the text entered on Page 01.

29.5 SUMMARY OF PAGES

Page 01	Section Title
Page 02	Output Point
Page 03-10	Digital Input Points

29.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt vvv

t..t Section Descriptor *User Entered Text or Menu*

This page enables the User to enter a **12 character** text descriptor to describe the function of the multiplexer.

This text descriptor will be displayed at section level.

vvv Value *System Generated*

This is the value that has been transferred into the Feature by the input point specified on Page 02.

The value on this page will be dependant on the status of the digital points configured on Page 03 through to Page 10.

The value will always be in the range **(0 to 255)**.

P02 OUT ADDR MUX VAL sss tttttttttt vvv
--

sss Output Point Address *User Entered*

This is the address of an analog point, which will be assigned the calculated result from the multiplexer.

Select From:

F02 - Measured Values

F04 - System Variables

t..t Descriptor *System Generated*

This is the descriptor text of the point, whose address has been specified.

v..v Value *System Generated*

This is the current value of the specified point.

Ppp IN ADDR VAL n sss tttttttttt mmm

<i>Ppp</i>	Page Number (03 to 10)	System Generated
<i>n</i>	Input point number (01 to 08)	<i>System Generated</i>
<i>sss</i>	Digital Point Address	<i>User Entered</i>

This is the address of a digital point which will be used as an input to the multiplexer.

Select From:

F01 - Digital Status
F05 - Digital Status
F06 - Digital Status

<i>t..t</i>	Descriptor	<i>System Generated</i>
-------------	------------	-------------------------

This is the descriptor entered on Page 01 of the digital point specified.

<i>m..m</i>	Point Status	<i>System Generated</i>
-------------	--------------	-------------------------

This is the current status of the point being specified.

Point 1 specified on Page 03 is the **least significant** point and has a “weighted value” of **1**.

Point 8 specified on Page 03 is the **most significant** point and has a “weighed” value” of **128**.

Example: If Points 1, 4, 6, and 8 are all in the “**MADE**” state, and Points 2, 3, 5, and 7 are all in the “**OPEN**” state, the value returned by the multiplexer is calculated as follows:

Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8
1	2	4	8	16	32	64	128
MADE	OPEN	OPEN	MADE	OPEN	MADE	OPEN	MADE

Analog Value = Weighted Sum of all Points in the MADE state.

For the above example the result obtained from the multiplexer is **(1+8+32+128) = 169**.

If the multiplexer is used in place of Feature 40 to start and to stop equipment, then safeties and alarms should be placed under Point 8 and moved downwards. A space should be left between alarms and the programming of schedules/overrides to allow for any additional higher priority items that may appear later. Programming should be done in the right-to-left (8-1) fashion and calculated accordingly. Several digital points can be transformed to one analog value and sent to a F02 - F39 for processing.

FEATURE 56 – DE-MULTIPLEXING

30.1 DE-MULTIPLEXING OVERVIEW

The De-Multiplexing Feature is used to convert an analog value into **eight** digital status values. The Feature's primary function is to decode an analog transfer, that has been sent over the network, into it's primary component parts. The analog signal is dealt with in one of two ways:

1. It is synthesised into eight "**weighted**" digital points. If the analog value is greater than or equal to **255**, all the digital points will be switched to the "**MADE**" state. If the value is less than **255** the status of the digital points will be determined according to their "**weighting**".
2. If the value is less or equal to **0**, all the digital points will be switched to the "**OPEN**" state.

30.2 TYPE OF FEATURE

Control

30.3 REFERENCE FEATURES

F01 - Digital Status
F02 - Analog Value
F03 - System Variables
F04 - Analog Value
F05 - Digital Status
F06 - Digital Status
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

30.4 SECTIONS

F56 DEMULTIPLEXING Snn tttttttttt
--

<i>nn</i>	Section Number	<i>System Generated</i>
<i>t..t</i>	Section Descriptor	<i>System Generated</i>

This is the text entered on Page 01.

30.5 SUMMARY OF PAGES

Page 01	Section Title
Page 02	Input Address De-multiplex Value
Page 03	Display Format
Page 04-11	Digital Output Points
Page 12	AND/OR Priority

30.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt vvv

t...t Section Descriptor

User Entered Text or Menu

This page enables the User to enter a **12 character** text descriptor to describe the function of the De-Multiplexer.

This text descriptor will be displayed at section level.

vvv Value

System Generated

This is the value that has been transferred into the Feature by the input point specified on Page 02.

P02 IN ADDR DEMUX VAL sss tttttttttt

sss Input Point Address

User Entered

This is the address of an analog point, whose value will be decoded into binary weighted digital points, or HOA representation.

Select From:

- F02 - Analog Value**
- F03 - System Variables**
- F04 - Analog Value**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

t..t Descriptor *System Generated*

This is the descriptor text of the point, whose address has been specified.

P03 DISPLAY VALUE IN mmm

mmm Display Type

Menu EEE

This page defines how the analog input value on Page 02 is to be represented.

One of the following two options must be chosen:

- BIN** - Binary representation.
- HOA** - Hand Off Auto representation.

The Hand Off Auto Hardcoded Table is as follows:

MSB		LSB		Range
P4	P3	P2	P1	
0	0	0	0	636 to 675
0	0	0	1	595 to 635
0	0	1	0	556 to 595
0	0	1	1	516 to 555
0	1	0	0	476 to 515
0	1	0	1	436 to 475
0	1	1	0	396 to 435
0	1	1	1	350 to 395
1	0	0	0	310 to 349
1	0	0	1	260 to 309
1	0	1	0	211 to 259
1	0	1	1	166 to 210
1	1	0	0	126 to 165
1	1	0	1	76 to 125
1	1	1	0	36 to 75
1	1	1	1	0 to 35

Discontinuities exist between the ranges in the table. If the value on Page 02 is outside of a range, then no change in state occurs until it falls back into a range.

It is used as a voltage representation in Hand Off Auto Mode. It's purpose is to allow an applications engineer to raise an alarm or invoke an interlock, when a User changes the operation of a digital output from automatic control to hand/manual control.

PPP OUT ADDR VAL n sss tttttttttt mmm

PPP Page Number (04 to 11) *System Generated*

n Input Point Number (1 to 8) *System Generated*

sss Digital Point Address *User Entered*

This is the address of a digital point, which is used as the output from the de-multiplexer.

Select From:

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

t..t Descriptor *System Generated*

This is the descriptor entered on Page 01 of the Digital point specified.

m..m Point Status *System Generated*

This is the current status of the digital point being specified.

The digital output Point specified on Page 03 represents the **least significant** bit within the analog value.

The digital output Point specified on Page 10 represents the **most significant** bit within the analog value.

Only Pages 04 - 07 are used in HOA mode. Pages 08 - 11 are always set to 0.

Example: If an analog value of **233** is received by the Feature, it is decoded into it's component parts in the following way:

$233/128 =$	1	Remainder 105	Point 8
$105/64 =$	1	Remainder 41	Point 7
$41/32 =$	1	Remainder 9	Point 6
$9/16 =$	0	The divisor > than value	Point 5
$9/8 =$	1	Remainder 1	Point 4
$1/4 =$	0	The divisor > than value	Point 3
$1/2 =$	0	The divisor > than value	Point 2
$1/1 =$	1	Remainder 0	Point 1

Wherever the calculation returns a value of **1**, then that point is considered to be in the "**MADE**" state. When a value of **0** is returned, then the point is considered to be in the "**OPEN**" state.

The results of the de-multiplex are shown below:

Point 1	Point 2	Point 3	Point 4	Point 5	Point 6	Point 7	Point 8
1	2	4	8	16	32	64	128
MADE	OPEN	OPEN	MADE	OPEN	MADE	MADE	MADE

P12 mmm PRIORITY

mmm Logic Priority

Menu H

This page defines the logic priority which governs the control of the outputs. One of the following two logical states must be chosen:

- "AND" - Logical AND
- "OR" - Logical OR

This feature may be calling for a particular output to be **ON**. However, if the priority has been configured as "**AND**", another influence in the system could hold the output **OFF**.

FEATURE 57 – NETWORK GROUP

31.1 NETWORK GROUP OVERVIEW

The Network Group Feature provides the User with a mechanism for sending data to a collection of Nodes (referred to as “the group”) on the ISN LAN. This is accomplished by referencing a single, common point at each controller in the group.

For example: If the User selects *Feature 02 Section 04* at each of a group of ten different controllers, he can then configure F57 in the MicroGateway to “**broadcast**” an analog or digital value to the controller group.

Each Section of F57 can transfer a single value to a group of up to **5 Nodes**. Each Section is addressed within the MicroGateway by a single, corresponding Section of *F28 - Analog Transfer*, or *F29 - Digital Transfer*.

31.2 TYPE OF FEATURE

Communications

31.3 REFERENCE FEATURES

F28 - Analog Transfer

F29 - Digital Transfer

31.4 SECTIONS

F57 NETWORK GROUP Snn tttttttttt

nn Section Number *System Generated*

t..t Section Descriptor *System Generated*

This is the text entered on Page 01.

31.5 SUMMARY OF PAGES

Page 01	Section and Group Title
Page 02	Destination Address Range

31.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 tttttttttt

t.t Section Descriptor *User Entered Text or Menu*

This Page enables the User to enter a **12 character** text descriptor to describe the group.

This text descriptor will be displayed at the Section level and will usually describe the function of the group.

P02 NODE NUMBER vv vv vv vv vv

vv Node Number *1 to 99*

Page 02 allows the User to configure up to **five** Node numbers, which are included within the group address, whose name has been defined on Page 01.

By configuring P02, a total of **5** Nodes may be specified. Each Section of this Feature represents one unique network group.

F28 or F29 manages the group address. Both Features may reference the same group number. A minimum of **1 Node** must be configured for this Feature to function.

This Feature will only operate on a single ISN network. It will **not** function through Pathfinders. Therefore all the Nodes referenced must exist on the same network.

The Feature that sources the data, i.e. *F28* or *F29*, manages information about the success or failure of the data transfers to these Nodes.

The same Nodes may be entered into different Sections of F57, thereby allowing for "functional overlaps" to occur.

Feature 58 – EEPROM SETUP

32.1 EEPROM SETUP OVERVIEW

This Feature allows the User to specify the address of any **User-editable** data located in the BRAM, which is required to be stored in EEPROM (also referred to as “E²”). This data is then maintained during a power failure in the event of the BRAM being corrupted.

If a system de-configures, then the data that is stored in the E² will be reloaded into the BRAM, ensuring the application's program is not effected. A system reset does not have any effect on the operation of the EEPROM.

The E² Setup Feature is an Engineering Feature consisting of up to **20 Sections** each of **60 Pages**. The term **BRAM** refers to the portion of capacitor-backed RAM that contains the unit's configuration as entered by the User.

The term “**Default Configuration**” refers to the configuration, which is permanently stored in EEPROM, and which is loaded into the BRAM if the controller de-configures.

32.2 TYPE OF FEATURE

System

32.3 REFERENCE FEATURES

All Features

32.4 SECTIONS

F58 EEPROM SETUP	Snn ENGINEERING
-------------------------	------------------------

nn Section Number

System Generated

32.5 SUMMARY OF PAGES

Page 01-60 EEPROM Data Reference

32.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

Ppp Fvv Svv Pvv Dvv Dvv mmmmmmmmmmm

Ppp Pages No (1 thorough to 60) *System Generated*

Fvv Feature Number *Any Feature*

This is the address of the Feature number, where the variable(s) is/are located.

Svv Section Number *Any Section*

This is the address of the Section number, where the variable(s) is/are located.

Pvv Page Number *Any Page*

This is the address of the Page number, where the variable(s) is/are located.

Dvv 1st Data Field *Any Data*

This is the first field number on the Page, whose data is to be saved. This must be less than or equal to the second field number, and greater than 0.

Dvv nth Data Field *Any Data*

This is the last field number on the page, whose data is to be saved. This must be greater or equal to the first field number.

Both preceding Data fields must be configured by the User.

This Feature does not need to be configured in order. For example, Page 10 could be configured first followed by Page 20 etc. If required, gaps can be left between pages. The User may also choose to configure five pages in one section, 25 in another etc. Once a configuration has been completed the User may then also remove pages without having to alter any of the other configuration.

m..m Status Information

System Generated

This is the Menu text generated by the System, which indicates whether all of the field data may be stored in the E²:

“OKAY” This informs the User that the field Data, defined by the field numbers, will fit into the E².

“OVERFLOW” This informs the User that the field Data, defined by the field numbers configured, exceeds the memory capacity of the E².

“CALCULATING” This prompt informs the User that the system is calculating the total number of bytes taken up by the field data as defined by the field numbers.

Note: If the user makes a configuration error, the following messages will be displayed.

“#06 FEATURE NUMBER OUT OF RANGE”

“#07 SECTION NUMBER OUT OF RANGE”

“#08 PAGENUMBER OUT OF RANGE”

“#11 PARAMETER OUT OF RANGE”

“#26 FIELD NOT FOUND

32.7 EEPROM SETUP - ENGINEERING ANALYSIS OVERVIEW

Feature F58 is an engineering facility, which allows a User to specify the data which is to be stored in E². The way, in which the E² facility has been designed to operate, requires that as a minimum, Feature F58 is stored in the EEPROM. In most circumstances, however, the User would configure the entire controller and then “burn” the complete BRAM configuration into EEPROM. When a controller is initially powered up with a new EEPROM fitted, the data that has been specified in the Default Configuration will be saved in the E².

If Feature F58 is edited but the new configuration is not saved to EEPROM, then the data that has been specified will not influence the operation of the E². This configuration must first be burned into EEPROM for these changes to take effect.

It is possible for a User to save a configuration in which all of the field data as defined in this Feature is not saved in the E². It is left to the User to ensure that the “**OKAY**” message is displayed at the end of each Page before the BRAM configuration is saved and burned into an EEPROM.

The data to be saved is configured in the form of field numbers. Each Page allows the User to specify the location of the variable(s) to be preserved in the form of Feature number, Section number, Page number, and a range of fields.

The User has the responsibility to ensure that the Feature, Section, and Page numbers entered are valid. Both fields must be entered, the second of which must be greater or equal to the first.

All fields, except those that consist of only space characters, are taken into account when referring to field numbers. However, only **User-editable fields** can be saved in the E².

When a page has been configured, the text at the end of the page displays “**CALCULATING**” to indicate that the configuration in Feature F58 is being checked to ascertain whether the field numbers configured will fit into the available space in the E². At the end of the calculation, “**OKAY**” is displayed to indicate that the actual field data will fit, otherwise “**OVERFLOW**” is displayed. In this case, the configuration must be amended until the “**OKAY**” message is displayed ensuring that all field data can be stored.

The amount of field data which may be stored depends upon the product used. Due to the speed of the calculation process, the User may not always see the “**CALCULATING**” prompt being displayed.

THE FIELD VIEW FACILITY enables the User to see the data that is being referenced by the field numbers configured on a given page.

The Facility is invoked at page level and only displays the data indicated by the field numbers, configured on the page currently being viewed. This Facility is available via the RS 232 port from a terminal or ISN LAN.

On a terminal, this facility is invoked by pressing "m" followed by a carriage return. The actual field data will then be displayed. A further carriage return will then send the User back to the page text of Feature F58.

Using the keypad (from another ISN controller over the LAN), pressing the **SELECT DATA** key invokes this function. The Feature text "**EEPROM SETUP**" is displayed on the top line of the display, with the bottom line containing the actual field data. This is then followed automatically by the page text of Feature F58.

This is not a "visit Facility". Therefore, entering "m" from the terminal or pressing the **SELECT DATA** key on the keyboard will not return the User to the page text of F58. Instead, the field data's display will be updated.

If the User invokes the Field View Facility from a terminal and an error has been made in the configuration, a message is displayed on the terminal instead of the field data. These messages are listed at the end of this chapter.

THE MEMORY CAPACITY of the E² restricts the amount of data that may be stored. Due to the requirement of data integrity, the number of available bytes is reduced from the actual capacity of the E².

The total available usable bytes for each of the products is:

$$((2048 - 2) / 2) - 1 = \text{<1022 bytes>}$$

The User may store the following types of data:

- | | |
|--------------------|----------------------|
| a. TEXT data | <1 byte / character> |
| b. MENU data | <1 byte> |
| c. POINT reference | <2 bytes> |
| d. REAL value | <4 bytes> |

FEATURE 59 – EEPROM DATA

33.1 EEPROM DATA OVERVIEW

Feature 59 is used to display the Feature, Section, Page, and Field references, which point to the data which is stored in the EEPROM.

It has the same structure as *F58*, the EEPROM Setup Feature. This Feature references field data in the form of field numbers. There are no User Enterable parameters in this Feature - it is **view only**.

Every time a controller is powered up, the entire default configuration of the EEPROM Setup Feature, *F 58* is copied across into Feature 59. Feature 59 always displays the default configuration of *Feature 58*, even if *Feature 58* is later altered.

If there is no default configuration in the EEPROM, all Feature, Section, Page, and Field numbers of Feature 59 are set to **zero**.

33.2 TYPE OF FEATURE

System

33.3 REFERENCE FEATURES

All Features

33.4 SECTIONS

F59 EEPROM DATA Snn CONFIGURATION

nn Section Number

System Generated

33.5 SUMMARY OF PAGES

Page 01-60 Reference to the Actual Data stored in the E².

33.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

Ppp Fvv SvV Pvv Dvv Dvv

Ppp Pages No (1 through to 60) *System Generated*

Fvv Feature Number *System Generated*

This is a System generated Feature number indicating where the variables are located.

SvV Section Number *System Generated*

This is a System generated Section number indicating where the variables are located.

Pvv Page Number *System Generated*

This is a System generated Page number indicating where the variables are located.

Dvv 1st Data Field *System Generated*

This is the first field number on the Page, whose data is to be saved.

Dvv nth Data Field *System Generated*

This is the last field number on the Page, whose data is to be saved.

FEATURE 60 – SYSTEM STRUCTURE

34.1 SYSTEM STRUCTURE OVERVIEW

The System Structure Feature allows a number of controller identification parameters, such as Name, Unit Identifier, Site, and Group Reference to be configured. The Feature allows the User to specify the operational mode of the controller, i.e. if it is to be in “RUN”, “HALT” or “MONITOR” mode. The **System Passwords** and the level of **Operator Access** are also defined here. The Feature also provides the User with access to some system control functions, which determine the way the controller is to operate.

34.2 TYPE OF FEATURE

System

34.3 REFERENCE FEATURES

All Features

34.4 SECTIONS

F60 SYSTEM STRUCTURE S01 CONFIGURATION

The complete series of System Structure Pages are contained in one Section.

34.5 SUMMARY OF PAGES

Page 01	Unit Name
Page 02	Unit Identifier
Page 03	Site Reference
Page 04	Group Identifier
Page 05	Unit Status
Page 06	Password Level 1
Page 07	Password Level 2
Page 08	Password Level 3
Page 09	Password Level 4
Page 10	Password Level 5
Page 11	System Cycle Time
Page 12	System Start Up Timer
Page 13	System Start Up Inhibit
Page 14	System Configuration Status

34.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 UNIT NAME tttttttttt

t..t Unit Name *User Entered Text or Menu*

This field allows the User to enter a unit identification of up to **12 characters**. If configured, it will appear on the top line of the display when the controller is accessed in Terminal Mode.

This Page **must** be configured if a "**DEFAULT**" configuration is "burned" into the EEPROM. If this Page has not been configured, then the "**DEFAULT**" configuration will **not** be loaded into BRAM after a controller has de-configured. (A minimum of **one** character is required).

P02 UNIT IDENTIFIER vvvv

v..v Unit Identity Number *0000 to 9999*

This is a four-digit identification number used to uniquely identify the controller.

P03 SITE REFERENCE vvvv

v..v Site Location Number *0000 to 9999*

This is a four-digit identification number used to uniquely identify the location of the controller.

P04 GROUP IDENTIFIER vvvv

v..v Group Identifier Number *0000 to 9999*

This is a four-digit number used to assign multiple controllers to a common group identifier.

P05 UNIT STATUS mmmmmmm

m..m Current Unit Status

Menu O

This field allows the User to select one of three operational modes, **"HALT"**, **"MONITOR"** or **"RUN"**.

When **"MONITOR"** is selected, only Features F01, F02, F04, F05, F06, F07, and F09 are operational. Reducing the functionality of the controller is often useful during the commissioning process. When **"RUN"** is selected, all functions are fully operational.

When **"HALT"** mode is selected, all monitoring functions are suspended.

Ppp PASSWORD n ttttttt FEATURE EXTENT vv

Up to **five** levels of Passwords may be configured, each level allowing varying degrees of access and editing capability.

The User must use a valid Password when accessing the controller. When the Password is entered, the system checks it against the configurations specified on Page 06 through Page 10 to determine if the Password is valid. If a match is registered, access is provided up to and including the Features defined in the **Feature Extent** field.

If a match is not registered, then the system scans the Report Level Passwords to determine compliance. (These are configured in Feature 49)

Ppp Page Number (06 to 10)

System Generated

n Password Level (01 to 05)

System Generated

t..t Password

User Entered

This is the Password key that is used to restrict User access to the system. It can consist of any string alphanumeric characters, one to eight digits in length.

vv Feature Extent *User Entered*

Each Password has a Feature Extent associated with it. This field defines the maximum Feature number that may be accessed with the password that has been entered on this Page.

An un-configured controller will default the Level 5 Password as specified on Page 10, to “5555” with a Feature Extent of *F62*. This gives the User access to all of the software.

P11 SYSTEM CYCLE TIME <i>mm</i> SECONDS
--

mm Cycle Time *Menu Q*

This is the duration of the System Cycle time in seconds.

This can be set to either: “1” or “2”. This parameter is used to change the time, which is available to execute the configured Features. The longer the system cycle the more processing power is made available.

P12 SYSTEM START TIME <i>vvv</i> SECONDS

vvv Start Up Timer *0 to 999*

This is the period of time that must elapse after the power has been restored prior to the controller becoming active.

This delay is not active during a mode to mode transition, (e.g. “HALT” to “RUN”) selected via Page 02.

P13 SYSTEM START INHIBIT mmm (TIME SYNC)*mmm* Start Inhibit*Menu N*

The User may select one of two conditions:

“YES” - After a memory loss, or after a reset, the controller will not restart until the time of day has been updated in F10 by a manual entry, or automatically by another controller.

(A controller's time clock may be synchronised by using *F46 – Network Status* in another controller).

“NO” - No time clock update is required for the controller to restart.

P14 RESERVED

FEATURE 61 – N2 ANALOG MAP

35.1 N2 ANALOG MAP OVERVIEW

Feature 61 allows ISN points to be mapped to standard N2 variables. Analog values found elsewhere in the MicroGateway Features can be assigned to predetermined ADF values.

The key to the Feature is a table with two elements. The first element is a “hard-coded” ADF variable (which constitutes the second element of the table). The second element is a configurable point that allows the User to assign any addressable ISN I/O Feature. The point’s “present value” is assigned to the N2 variable. Present value is always displayed.

Once an ISN to ISN association has been established, data may be exchanged in either direction between the Micro-Gateway and an N2 Network Manager.

35.2 TYPE OF FEATURE

Communications

35.3 REFERENCE FEATURES

F02 - Analog Value
F03 - System Variable
F04 - Analog Value
F07 - Analog Value
F08 - Conditional Logic
F09 - Analog Value

35.4 SECTIONS

F61 N2 ANALOG MAP S01 tttttttttt

S01 Section Number

System Generated

All the data maintained by the Analog Map Feature is contained in a single Section.

t..t Contents of page 01

System Generated

35.5 SUMMARY OF PAGES

Page 01-84 Analog Mapping

35.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 ADF YYY: nnn vvvvv STATUS mmmmmmmmmmm
--

YYY *System Generated*

Represents the hard-coded N2 point type address that is mapped to this particular page.

nnn *User Entered*

Select from:

- F02 - Analog Value**
- F03 - System Variable**
- F04 - Analog Value**
- F07 - Analog Value**
- F08 - Conditional Logic**
- F09 - Analog Value**

vvvvv *System Generated*

This represents the present value of the selected ISN Feature.

mmmmmmmmmm *System Generated*

This message indicates the mode is controlling the selected point. This information is provided for diagnostic purposes. The following modes are supported: **“OVERRIDDEN”** and **“AUTOMATIC”**.

When **“OVERRIDDEN”** is displayed, the “present value” of the specified ISN point is being set by an external command. When **“AUTOMATIC”** is displayed, the “present value” of the specified ISN point is being supplied by the Feature itself.

Note: Any ISN Analog Feature that has been overridden will have an asterisk (*) displayed at the end of the data on Page 1.

FEATURE 62 – N2 DIGITAL MAP

36.1 N2 DIGITAL MAP OVERVIEW

Feature 61 allows ISN points to be mapped to standard N2 variables. Digital values found elsewhere in the MicroGateway Features can be assigned to predetermined BD values.

The key to the Feature is a table with two key elements. The first element is a “hard-coded” BD variable (which constitutes the second element of the table). The second element is a configurable point that allows the User to assign any addressable ISN I/O Feature. The point’s “present value” is assigned to the N2 variable. Present value is always displayed.

Once an ISN to ISN association has been established, data may be exchanged in either direction between the Micro-Gateway and an N2 Network Manager.

36.2 TYPE OF FEATURE

Communications

36.3 REFERENCE FEATURES

F01 - Digital Status

F05 - Digital Status

F06 - Digital Status

36.4 SECTIONS

F61 N2 DIGITAL MAP S01 tttttttttt
--

S01 Section Number

System Generated

All the data maintained by the Digital Map Feature is contained in a single Section.

t..t Contents of page 01

System Generated

36.5 SUMMARY OF PAGES

Page 01-84 Digital Mapping

36.6 PAGE DETAIL

The following briefly describes the format of each Page displayed and the data each Page can contain.

P01 BD YYY: nnn vvvvv STATUS mmmmmmmmmmm

YYY *System Generated*

Represents the hard-coded N2 point type address that is mapped to this particular page.

nnn *User Entered*

Select from:

F01 - Digital Status
F05 - Digital Status
F06 - Digital Status

vvvvv *System Generated*

This represents the present value of the selected ISN Feature.

mmmmmmmmmm *System Generated*

This message indicates the mode which is controlling the selected point. This information is provided for diagnostic purposes. The following modes are supported: **“OVERRIDDEN”** and **“AUTOMATIC”**.

When **“OVERRIDDEN”** is displayed, the “present value” of the specified ISN point is being set by an external command. When **“AUTOMATIC”** is displayed, the “present value” of the specified ISN point is being supplied by the Feature itself.

Note: Any ISN Digital Feature that has been overridden will have an asterisk (*) displayed at the end of the data on Page 1.

APPENDIX - DISPLAY MENUS

Menu A - Engineering Units

00		Blank
01	C	Celsius
02	W	Watts
03	KW	Kilowatts
04	MW	Megawatts
05	WH	Watt-Hours
06	KWH	Kilowatt-Hours
07	MWH	Megawatt-Hours
08	L	Litres
09	M3	Cubic Meters
10	KG	Kilograms
11	NM2	Newton Meters Squared
12	LPS	Litres Per Second
13	LPH	Litres Per Hour
14	M3S	Cubic Meters Per Second
15	M3H	Cubic Meters Per Hour
16	KGS	Kilogrammes Per Second
17	KGH	Kilogrammes Per Hour
18	JPS	Joules Per Second
19	KJS	Kilo-Joules Per Second
20	MJS	Mega-Joules Per Second
21	CMS	Centimetres Per Second
22	MPS	Meters Per Second
23	BAR	Barometric Pressure
24	LBS	Pounds Weight
25	TNS	Tons
26	GAL	Gallons
27	GPM	Gallons Per Minute
28	GPH	Gallons Per Hour
29	FTS	Feet Per Second
30	PSI	Pounds Per Square Inch
31	%	Percent
32	£	Pounds Sterling
33	P	Pence
34	\$	Dollars
35	CTS	Cents
36	FR	Francs
37	DM	Deutsche Marks
38	PF	Pfennigs
39	DEG	Degrees
40	FT3	Cubic Feet
41	PSA	Pounds Per Square Inch Absolute

42	V	Volts
43	KV	Kilo-volts
44	A	Amps
45	LUX	LUX
46	PA	Pascals
47	KPA	Kilo-Pascals
48	F	Fahrenheit
49	KVA	Kilo-volt Amps
50	ABS	Absolute
51	CFM	Cubic Feet/Minute
52	"WG	Inches of Water
53	"HG	Inches of Mercury
54	HZ	Hertz
55	LBH	Pounds per Hour
56	CFH	Cubic Feet/Hour

Menu C - On/Off Conditions

01	OFF	Off
02	ON	On
03	OPN	Open
04	CLO	Closed
05	STA	Started
06	STO	Stopped
07	ENA	Enabled
08	DIS	Disabled
09	HI	High
10	LO	Low
11	NOR	Normal
12	ALM	Alarm
13	TBL	Trouble
14	FLT	Fault
15	FIR	Fire
16	UNS	Unsecure
17	SEC	Secure
18	FST	Frost
19	RUN	Run
20	YES	Yes
21	NO	No
22	TRP	Tripped
23	SUM	Summer
24	WIN	Winter
25	END	End
26	FLO	Flow
27	NFL	No Flow

28	CLG	Cooling
29	EXT	Extended
30	LOC	Local
31	AUT	Auto
32	HTG	Heating
33	BLK	Blocked
34	UNL	Unload
35	LOD	Load

Menu D - On/Off Mode Definitions

0	OPEN	Open
1	MADE	Made

Menu E - On/Off Manual Override

0	AUTOMATIC	Automatic
1	MANUAL ON	Manual On
2	MANUAL OFF	Manual Off
3	OVERRIDE	Temporary Override

Menu G -Days of the Week

0	MONDAY	Monday
1	TUESDAY	Tuesday
2	WEDNESDAY	Wednesday
3	THURSDAY	Thursday
4	FRIDAY	Friday
5	SATURDAY	Saturday
6	SUNDAY	Sunday

Menu H - Logic Priority

0	OR	Or
1	AND	And

Menu I - Extension States

0	Blank	
1	EXT	Extended
2	REM	Remote

Menu J - Day Types

00	---	No Configured Day Type
01	W/E	Weekend
02	W/D	Weekday
03	MON	Monday
04	TUE	Tuesday
05	WED	Wednesday

06	THU	Thursday
07	FRI	Friday
08	SAT	Saturday
09	SUN	Sunday
10	HOL	Holiday
11	JAN	January
30	FEB	February
31	MAR	March
32	APR	April
33	MAY	May
34	JUN	June
35	JUL	July
36	AUG	August
37	SEP	September
38	OCT	October
39	NOV	November
40	DEC	December

Menu M - Parity

0	NONE	None
1	IGNR	Ignore
2	ODD	Odd
3	EVEN	Even

Menu N - Yes/No

0	NO	No
1	YES	Yes

Menu O - Unit Status

0	HALT	Halted
1	RUN	Running
2	MONITOR	Monitor

Menu P - Calculation Types

0	CALCULATION	Main calculation type
1	AVERAGE	Average
2	HIGHEST	Highest
3	2ND HIGHEST	2nd Highest
4	3RD HIGHEST	3rd Highest
5	LOWEST	Lowest
6	SQUARE ROOT	Square Root
7	SLD TIME AVERAGE	Slide Time Average

Menu Q - Cycle Times

0	1	Second
1	2	Seconds

Menu R - Baud Rates

0	50K	50,000 Baud
1	9600	9600 Baud
2	4800	4800 Baud
3	2400	2400 Baud
4	1200	200 Baud

Menu S - Baud Rate

0	1200	1200 Baud
1	2400	2400 Baud
2	4800	4800 Baud
3	9600	9600 Baud
4	19.2K	19,200 Baud
5	36.4K	36,400 Baud

Menu T - Enable

0	DISABLED	Disabled
1	ENABLED	Enabled

Menu U - Disable

0	ENABLED	Enabled
1	DISABLED	Disabled

Menu V - Channel Number

0	Blank
1	1
2	2

Menu W - Channel Number

0	Blank
1	1
2	2

Menu X - Control

0	HIGHEST	Highest
1	LOWEST	Lowest

Menu Z - Binary

0	0
1	1

Menu AA - Numbers

0	1
1	2
2	3
3	4

Menu BB - Numbers

0	0
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8

Menu EE - Math Function

0	Blank	No Function
1	+	Addition
2	-	Subtraction
3	*	Multiplication
4	/	Division

Menu FF - Search Function

0	CONTROL POINT	Control Point
1	CONTROLLED POINT	Controlled Point

Menu GG - Report Parameter

0	FIX	Fixed
1	EDI	Editable

Menu HH - Time Type

0	RUN	Actual Run Hours
1	ELAPSED	Hours Elapsed 24 HR clock

Menu II - Days of the Week

0	Blank	
1	MONDAY	Monday
2	TUESDAY	Tuesday
3	WEDNESDAY	Wednesday
4	THURSDAY	Thursday
5	FRIDAY	Friday
6	SATURDAY	Saturday
7	SUNDAY	Sunday

Menu JJ - York Talk

0	YT	R11/R123/Monoshell Centrifugal
1	YK	Centrifugal Super Chiller
2	YG	Gas Engine Centrifugal Super Chiller
3	YS	124 - 400 Ton Rotary Screw Chiller
4	A1	Air Cooled Screw Chiller
5	A3	Air Cooled Screw Chiller (Slave Units)
6	B1	Recip Chiller 2 Comp & Recip Master Unit (UK)
7	B3	Recip Chiller Slave Unit (UK)
8	C1	Recip Chiller 2 Comp & Recip Master Unit (USA)
9	C3	Recip Chiller Slave Unit (USA)
10	YP	Paraflow Absorption
11	YI	Isoflow Absorption
12	RT	Rooftop
13	LS	Frick 1250 Screw
14	H1	AWHP - Two System Master Unit
15	H3	AWHP - Two System Slave Unit
16	HX	AWHP - Single System
17	TR	Empty menu option

Menu KK - Network Calculations

0	NOT USED	Not used
1	SUM	Sum
2	LOWEST	Lowest
3	2ND LOWEST	2nd Lowest
4	HIGHEST	Highest
5	2ND HIGHEST	2nd Highest
5	AVERAGE	Average
4	TOTAL POS	Total positive
5	TOTAL NEG	Total negative

Menu LL - Yes/No Option

0	YES
1	NO

Menu MM - Operating Mode

1	COOLING	Cooling
2	HEATING	Heating

Menu NN - Off/On Conditions

1	OFF	Off
2	ON	On

Menu OO - Frequency

- 0
- 1 NONE None
- 2 MONTHLY Monthly
- 3 QUARTERLY Quarterly

Menu PP - Frequency 2

- 0
- 1 HOURLY Hourly
- 2 DAILY Daily
- 3 WEEKLY Weekly
- 4 MONTHLY Monthly

Menu QQ - Time States Usage

- 1 FIX Fixed
- 2 RST Reset
- 3 EXP Expired

Menu RR - Control Mode

- 0 AUTOMATIC For non-manual override
- 1 MANUAL For manual override

Menu SS - Numbers 0 - 8

- 0 0
- 1 1
- 2 2
- 3 3
- 4 4
- 5 5
- 6 6
- 7 7
- 8 8

Menu TT - A or B Option

- 0
- 1 A
- 2 B

Menu UU - Destination Type

- 0 DESTINATION NODE
- 1 DESTINATION GROUP

Menu VV - Device Type

0		
1	DA	Damper Actuator
2	DPS	Differential Pressure Switch
3	DPT	Differential Pressure Transducer
4	DTT	Duct Temperature Transmitter
5	EP	Electric Pneumatic Switch
6	FS	Flow Switch
7	FT	Flow Transmitter
8	H	Humidistat
9	HH	High Level Humidistat
10	LC	Level Controller
11	LVT	Level Sensor Transducer
12	LVS	Level Switch
13	OT	Oxygen Level Transmitter
14	P	Position Indicator
15	PC	Pressure Controller
16	PI	Pressure Indicator
17	PS	Pressure Switch
18	PT	Pressure Transmitter
19	RHT	Relative Humidity Transmitter
20	RSH	Room Steam Humidifier
21	SH	Steam Humidifier
22	SMK	Smoke Detector
23	STR	Motor Starter
24	T	Thermostat
25	TI	Temperature Indicator
26	TM	Turbine Meter
27	TSH	High Limit Temperature Sensor
28	TSL	Low Limit Temperature
29	TT	Temperature Transmitter
30	VFC	Variable Frequency Controller
31	VLV	Valve
32	VS	Vibration Switch
33	SC	Status Contact

Menu WW - Analog Source

- 0 DUMMY
- 1 REMOTE
- 2 YORK TALK
- 2 TIME
- 3 DATE
- 4 DAY-TYPE
- 5 NXT START
- 6 NXT STOP
- 7 MULTIPLEX
- 8 SETPOINT
- 9 NODE NUM

Menu XX - Digital Source

- 0 DUMMY
- 1 REMOTE
- 2 YORK TALK
- 3 DE-MULTPX
- 4 SOURCE NODE
- 5 SOURCE SYSTEM

Menu YY - Pulse Source

- 0 DUMMY
- 1 PULSE
- 2 YORK TALK
- 3 TIME
- 4 DATE
- 5 DAY-TYPE
- 6 NXT START
- 7 NXT STOP
- 8 MULTIPLEX
- 9 SETPOINT
- 10 PULSE NODE
- 11 PULSE SYSTEM

Menu ZZ - Open Bracket Option (Selected automatically when Menu ZZ is selected)

0	Blank	
1	(Open Bracket

Menu AAA - Close Bracket Option

0	Blank	
1)	Closed Bracket

Menu BBB - Analog Transfer Destination Feature

0	2
1	27

Menu CCC - Digital Transfer Destination Feature

0	5
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Menu DDD - Net Data Enable

0	D	Disabled
1	E	Enabled

Menu EEE - Display Type

0	BIN
1	HOA

Menu FFF - Select Channel 1 Communications Type

0	ISN LAN
1	YORKTALK

Menu GGG - Select Channel 2 Communications Type

0	GENERAL FORMAT
1	YORKTALK
2	GPIC